

# AIR POWER

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# *History*





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## History

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COVER: Staff Sgt. Christopher Bankston watches from a C-17 Globemaster III Mar. 3, 2011, as air delivery cargo drops to a remote operating base in Afghanistan. (U.S. Air Force photo/Master Sgt. Adrian Cadiz)



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Giulio Douhet, the celebrated Italian air power theorist and his principal work, *The Command of the Air*; are well known. But few air power enthusiasts have heard of Douhet's antagonist, Amedeo Mecozzi, an Italian air force officer. In our first article, authors Rodolfo Sganga, Paulo Tripodi, and Wray Johnson remedy that deficiency. They discuss Mecozzi's career, his writing, and the basic points of disagreement between the two theorists. The authors note that while Douhet's reputation rests on his vision, Mecozzi's rests on his pragmatism. Thus, Mecozzi opposed Douhet's views on targeting civilians and on establishing an independent air force. But Mecozzi's views rested on effectiveness, not humanitarian concern.

In the second article, Michael Gorn examines the relationship between the National Advisory Committee for Aeronautics (N.A.C.A.) and the U.S. Army during the so-called "Golden Age of Aviation." Having written official history for both the Air Force and NASA, Gorn is very well-equipped to tackle this subject. In this first part of a two-part series, Gorn demonstrates that under Brig. Gen. George P. Scriven the Army-N.A.C.A. relationship flourished, in sharp contrast to the acrimony that marked the period after Scriven left. On the other hand, the N.A.C.A. and the U.S. Navy enjoyed excellent cooperation throughout the Golden Age. Find out why.

Herman Wolk, who died last year, was one of the leading scholars of grand strategy in World War II, challenges our understanding of the Potsdam Conference of July 1945. Here Wolk delves into a familiar topic to unearth new insights by combining his in-depth research, broad knowledge of the principal American civilian and military leaders, and extensive analytical power. Even readers who claim a broad familiarity with the subject may be surprised to learn the views of some of the military representatives attending the Conference and the reasons behind them.

In the fourth article, Neil Sheehan—news reporter, Pulitzer Prize winning author, and respected military analyst—reviews Bob Woodward's recent book, *Who Loses Obama's Wars?* Since at least 1839, Afghanistan has fiercely resisted foreign invaders, becoming a bone yard for those so foolish as to try. The Americans are only the latest unfortunates to have marched into this one-way bog. Ironically, President Barack Obama's disengagement policy resembles Richard Nixon's failed Vietnamization strategy of a generation ago. Sheehan shows that Vietnamization failed because South Vietnam's armed forces reflected their own corrupt government. Therefore, the American-supported Afghan government is also bound to fail. The Taliban has only to wait for the United States to leave after losing too many troops and too much treasure.

Twenty new books on air power and aviation history are reviewed in this issue. Be sure to read one author's reaction to a critical review of his book published in an earlier issue of *Air Power History*. [The author is Thomas Reed, a former Secretary of the Air Force; his letter appears on page 60.]

The familiar Departments section includes the consistently informative and entertaining History Mystery, an extensive list of reunions that runs into 2012 and beyond, and news.

We are saddened to note the passing of **Colonel Helen O'Day**, a lady who amazed and inspired all who knew her. An appreciation of her life and career appears on page 63.

Please do not overlook the announcement and registration for **the 9/11 Symposium on November 17 and 18, 2011**. [See pages 58-59.] The Air Force Historical Foundation—which publishes this journal—has launched a determined drive to sign up as many new members as possible, to offset the hundreds of subscriptions lost as a result of USAF's deep budget cuts. One drive coincides with the upcoming symposium. Notice that non-members who register for the symposium will receive a \$15 credit if they sign up for Foundation membership.



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# Douhet's Antagonist: Amedeo Mecc



# ozzi's Alternative Vision of Air Power



Rodolfo Sganga  
Paulo G. Tripodi  
Wray R. Johnson

(Overleaf) Savoio Marchetti Sm. 79 Sparviero ("Sparrow"), the most important Italian bomber of WWII, a tough three-engined aircraft that excelled as a land-based torpedo bomber but a failure in the "Douhetian" sense of bombardment aviation. (Photo courtesy of the Bundesarchiv.)

IN  
DECEMBER  
1920,  
MECOZZI  
PUBLISHED A  
CRITIQUE OF  
DOUHET'S  
PIONEERING  
AND  
REVOLU-  
TIONARY  
IDEAS  
REGARDING  
THE FUTURE  
OF AVIATION

Contrary to popular belief, Giulio Douhet, Italy's well-known air power visionary—whose powerful and controversial ideas continue to provoke debate about the efficacy of air power—was not without opposition in Italy. Before his most famous work, *Il Dominio Dell'Area*, was translated into English as *The Command of the Air*, Douhet's ideas were heavily criticized by a clever Italian air force officer named Amedeo Mecozzi. Mecozzi challenged many of Douhet's key concepts, including the very notion of "command of the air," but also the efficacy of long-range "strategic bombardment," the targeting of civilians, and the idea that an "air force," independent of the other armed services, could achieve victory in war. Concomitant with his strong criticism of Douhet's propositions, Mecozzi proffered his own concepts about air power, ideas that offer an interesting and useful counterpoint to those of Douhet in the context of the continuing debate about the role of air power in modern warfare. But, despite his important role in the development of air power, a complete biography of Mecozzi does not yet exist, and most of his work (especially the essays published in professional journals) have yet to be translated into English and are difficult to access outside of Italy. Thus, Mecozzi's thoughts on air power are a subject limited to a select group of specialists in aviation history, and the full weight of his ideas will, for the foreseeable future at least, remain hidden.

With the above in mind, this essay provides only a cursory examination of Mecozzi's work with the intent to explore his ideas as antithesis to the more famous thesis of Douhet. In that regard, the relationship between Mecozzi and Douhet is not unlike that between Lt. Col. William C. "Bill" Sherman and Brig. Gen. William "Billy" Mitchell, the latter another icon of air power history. A one-time subordinate of Mitchell, Sherman was perhaps the most intellectually flexible of the early air power advocates. Sherman was present when the foundations of air power theory were laid, and he played a significant role in the construction of U.S. Army aviation doctrine between the world wars until his death in 1927. Virtually forgotten today, Sherman's book, *Air Warfare*, was much more rigorous in its approach and balanced in its argument than Mitchell's *Winged Defense*, and there is some evi-

dence that Mitchell borrowed heavily from Sherman's ideas.<sup>1</sup> Likewise, there is a strong argument to be made that the theoretical underpinnings of the Italian *Regia Aeronautica* owe more to Mecozzi than Douhet.

Amedeo Mecozzi was born in Rome on January 17, 1892. As a young man he enlisted in the *Regio Esercito* (Royal Army) in the engineer corps. A few months after the beginning of World War I, he was assigned to the aviation service and in September 1915 he attended the basic flying course at the Malpensa Pilots School (Varese), where he was awarded his wings. During that time, he flew the Farman 12 and later the Farman 14 aircraft. From March 1916 to January 1917, Mecozzi served with the 46th, 48th, 49th, and 50th Squadrons. In September 1917, Mecozzi returned to the Malpensa Pilots School to train as a fighter pilot. On October 4, 1917, he received a battlefield promotion to first lieutenant. He was then assigned to the 76th Squadron and later to the 78th Squadron, where he remained until February 1919. With six aerial victories under his belt, he was one of the most distinguished Italian fighter pilots of World War I, and over the course of the war he was awarded the War Cross as well as one silver and two bronze Military Valour medals.

After the war, Mecozzi joined the Italian military mission to Paris and later in Rome he conducted experimental flights with several new aircraft. From 1926 to 1929 he was the Public Information Officer for the *Regia Aeronautica*. In October 1929, newly promoted to major, Mecozzi took command of the 7th Land Fighter Group at Ciampino near Rome. By April 1937, he had been promoted to brigadier general and took command of the 7th Autonomous Assault Group. There he experimented with various ideas regarding the roles and missions of air power. Due to poor health Mecozzi did not actively participate in World War II. But following his retirement from military service in 1945, he became the chairman of the Royal Air Club of Italy and editor of *Rivista Aeronautica*. He died in Rome on November 2, 1971.<sup>2</sup>

In December 1920, Mecozzi published a critique of Douhet's pioneering and revolutionary ideas regarding the future of aviation. He focused his criticism on Douhet's vision of "command of the air,"

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*Dr. Wray Johnson is a retired U.S. Air Force colonel with a background in special operations. He is a former professor at the USAF School of Advanced Airpower Studies, Maxwell AFB, Alabama, and is currently professor of Military History at the Marine Corps School of Advanced Warfighting. He is the author of numerous articles and two books, Vietnam and American Doctrine for Small Wars and Airpower in Small Wars: Fighting Insurgents and Terrorists.*

(Near right) Giulio Douhet.

(Far right) Amedeo Mecozzi.

**DOUHET WAS THE VISIONARY WHEREAS MECOZZI WAS MUCH MORE PRACTICAL AND, ARGUABLY, BALANCED**



**IN 1926, MECOZZI PRESENTED HIS OWN IDEAS ABOUT AIR WARFARE IN RIVISTA AERONAUTICA**

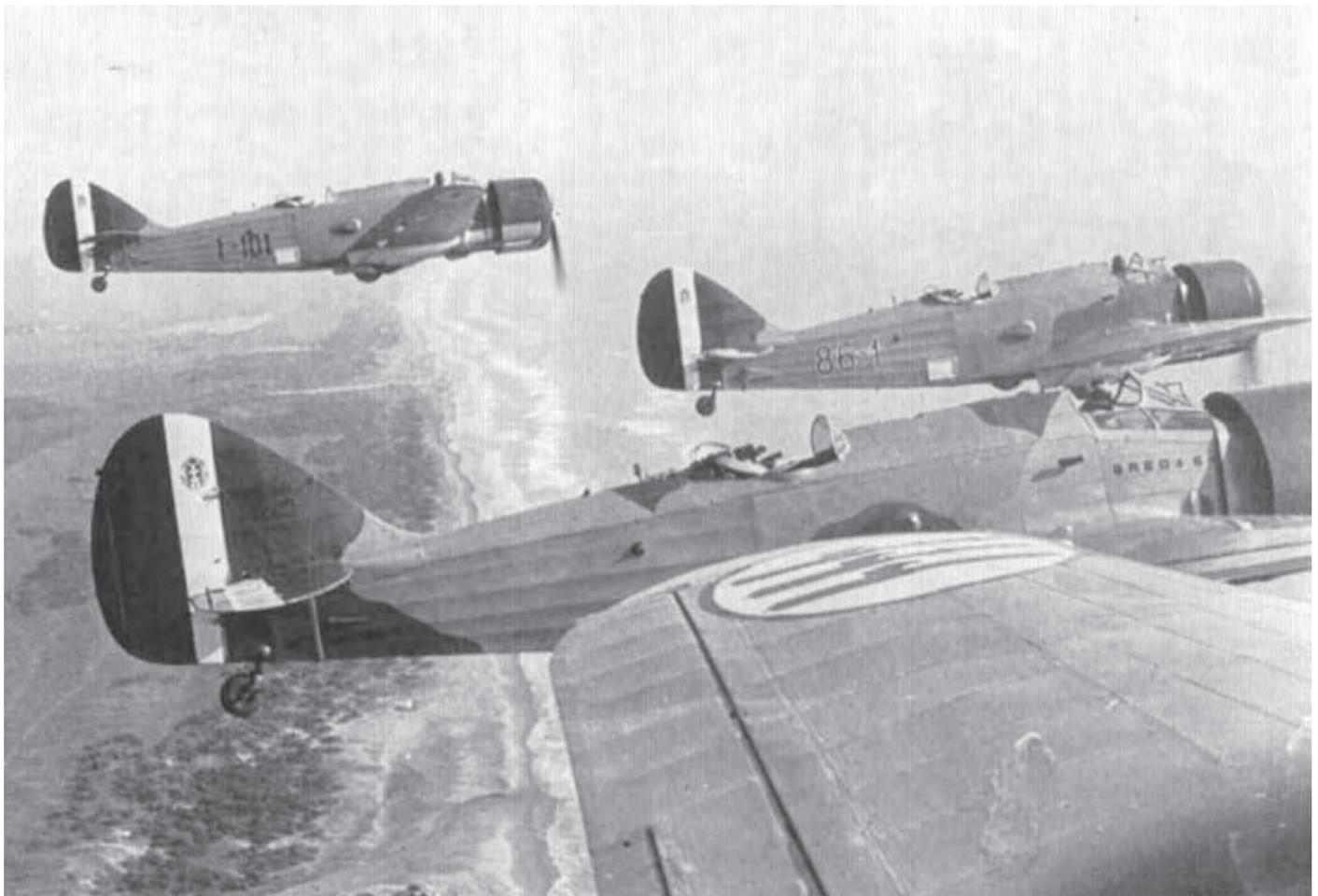
arguing that the idea was flawed mostly because it was simply too difficult to achieve.<sup>3</sup> Not unlike Mitchell and Sherman, Douhet was the visionary whereas Mecozzi was much more practical and, arguably, balanced in his approach. Douhet expressed grand certainties about the future of air power based on very little empirical evidence but pointing, nonetheless, to what he believed would prove irrefutable permanent principles on the conduct of aerial warfare. In that sense, Douhet's approach has been described as Jominian.<sup>4</sup> But as one student of Douhet has noted, although his rationalism paralleled that of Jomini, it went much further.<sup>5</sup> Indeed, although Douhet's methodology was based on a contemporary understanding of science, technology, and deductive logic, he advanced principles regarding air warfare that amounted to dogmatism.<sup>6</sup> With that in mind, the criticism of the late historian Claudio Segré is enlightening. Segré highlighted the deterministic approach of Douhet and proclaimed that "he detested the romance of flying." Unlike Mecozzi, who regarded pilots as having great insight about aerial warfare, Douhet believed that "airplanes were weapons delivery systems and pilots were mere technicians."<sup>7</sup>

Given his background and experience, it is not surprising that Mecozzi's approach was significantly different from that of Douhet. Whereas Douhet was a graduate of the Military Academy, Mecozzi was self-educated. And unlike Douhet, the earth-bound artillery officer, Mecozzi was a distinguished combat pilot and an ace. On the other hand, both men had a strong intellectual curiosity and both were prolific authors, writing several books each as well as numerous articles.<sup>8</sup> Not unlike Alexander P. DeSeversky, a Russian combat pilot during World War I, founder of the Republic Aircraft Corporation, and the designer of numerous aircraft of World War II, Mecozzi appreciated not only the promise of aviation but also its limitations. He knew

what it meant to fly and fight but, more importantly, he possessed a sound technical knowledge of aircraft and their capabilities. In the end his understanding of air warfare was based on his wartime experience, which "set the fighter pilot [Mecozzi] against the *Regio Esercito* General Staff Colonel [Douhet]."<sup>9</sup>

As noted earlier, the key point criticized by Mecozzi was the whole idea of command of the air. For Douhet, "To have command of the air means to be in a position to wield offensive power so great it defies human imagination." Moreover, "To be defeated in the air [is] to be defeated and to be at the mercy of the enemy." Consequently, to achieve command of the air "means victory."<sup>10</sup> In the 1920s and 1930s such an idea was very appealing to many Italian, British, and American military aviators. At a time when the role of aviation was considered in many armies to be secondary and supportive of surface operations, Douhet's notion of winning wars through the offensive, strategic, and independent employment of air power was a compelling concept. In accordance with Douhet's argument, the roles would be reversed: an independent air force would take the lead in carrying the fight to the enemy while the surface forces—that is, the army and navy—would play a secondary, even adjunctive role.<sup>11</sup>

In 1926, Mecozzi presented his own ideas about air warfare in *Rivista Aeronautica*.<sup>12</sup> Mecozzi was very skeptical that command of the air could ever realistically be achieved.<sup>13</sup> He maintained that Douhet's idea of total defeat of the enemy air force was impracticable and the requirement to create an air force capable of pursuing such an objective was inconsistent with Italy's economic well being.<sup>14</sup> Therefore, rather than committing significant and scarce national resources to building such an air force, Mecozzi suggested that the best course was to develop an air force capable of supporting the sur-



Owing to the influence of Mecozzi, the Italian air force before WWII sought to develop an assault air arm, including such aircraft as the Breda BA.64 that could serve as fighter, light bomber, and reconnaissance aircraft.

**MECOZZI ARGUED THAT... THERE IS NO AIR POWER STRATEGY APART FROM MILITARY STRATEGY**

face forces as well as striking high value enemy targets in the enemy rear, the destruction of which would significantly affect the course of a military campaign.<sup>15</sup>

Mecozzi argued that air power is but one element of the broader concept of military power and the two cannot be separated. In short, there is no air power strategy apart from military strategy and the air force and the other services complement one another. He, therefore, rejected Douhet's idea that an air force should operate independently from the action of surface forces.<sup>16</sup> Mecozzi believed that combat power is the sum total of all the armed forces operating in cooperation with one another and that the various forces available—air and surface—should act together to achieve decisive results.<sup>17</sup> Similarly, Mecozzi sought to refute Douhet's categorical assertion that "aerial warfare admits of no defense, only offense,"<sup>18</sup> recommending the development of a sophisticated air defense plan for Italy, with fighter groups covering specific zones.<sup>19</sup> In addition, not unlike Sherman, Mecozzi appreciated the great potential of air defense artillery. However, he recommended control of air defense artillery be given to the air force, which he believed to be the most competent armed service to coordinate air defense both on the ground and in the air.<sup>20</sup>

According to Mecozzi, whether on the offense or the defense, once the battle is joined the outcome is

determined by many factors and the extent to which the air force is able to gain control of the air may or may not play a decisive role in deciding the outcome. Much depends on the relative capabilities of the contending air forces. If, for example, an enemy were to attack with a powerful air force, one equal to or perhaps more powerful than one's own air force, then the fight on the ground would probably determine the outcome of the war while the two air forces wrestled for air superiority. On the other hand, were one's own air force strong enough to quickly prevail over an enemy air force, the enemy's land forces would be vulnerable to air attack and their ability to continue operations would be sorely threatened. Yet, even then the enemy air force would contest command of the air and under such conditions friendly ground forces would still be required to exert considerable, if not maximum, effort to resist an enemy attack.<sup>21</sup> Likewise, one's own attack would be constrained by enemy air action even if one's own air force achieved some measure of command of the air. In short, Mecozzi believed that obtaining command of the air is very much tied to one's own as well as the enemy's air potential.<sup>22</sup> He wrote: "To achieve command of the air is as much Douhet's legitimate aspiration as mine, but it is also the enemy's aspiration. Douhet always forgets this."<sup>23</sup>

Mecozzi claimed that realistically command of the air can only be achieved temporarily. Writing in

RATHER THAN FOCUSING ON PERMANENT AND GENERAL COMMAND OF THE AIR... MECOZZI PROMOTED THE IDEA THAT CONTESTING AIR SUPERIORITY ...SHOULD BE THE PRINCIPAL ROLE FOR THE AIR FORCE

a vein similar to that of a British contemporary, Wing Commander J. C. “Jack” Slessor, he wrote: “Do not waste time pursuing command of the air, but commit yourself to achieve those local and temporary superiorities that effectively contribute to decisive results on the ground.”<sup>24</sup> For Mecozzi, then, the goal is to achieve a favorable edge in the correlation between one’s own aerial forces and those of the enemy, to the advantage of one’s own objectives. In other words, temporary and local air superiority might be sufficient to achieve one’s objectives as opposed to fighting for absolute command of the air. Mecozzi went so far as to assert that one might even concede command of the air *a priori*, especially if one’s air force is patently inadequate to the task of gaining command of the air.<sup>25</sup> In merely contesting command of the air or fighting for local air superiority, one can still affect the outcome of the battle by preventing the enemy from securing and exploiting command of the air.<sup>26</sup> Thus, rather than focusing on permanent and general command of the air, which he considered to be unattainable, Mecozzi promoted the idea that contesting air superiority (or “prevalence” as he termed it), while supporting the ground forces, should be the principal role for the air force.<sup>27</sup>

Douhet was a strong believer in the dominance of the air force in relation to the other services. He believed that, although the army and navy still played a role in national defense as instruments for indirect attrition of the enemy’s combat power, the air force was the only service that could directly break the enemy’s will to resist. But to that end not just any air force would do. Douhet strongly advocated the creation of a fleet of large, long-range, self-defending bombers that would penetrate enemy air space and devastate certain “vital centers,” especially industry and cities.<sup>28</sup> To fulfill its offensive and strategic potential, he called for an air force to be independent of the other services, capable of fighting and winning on its own.<sup>29</sup> Such an idea greatly appealed to the fascist regime which came to power in Italy under Benito Mussolini. The fascists welcomed Douhet’s ideas as being well suited to regime values and objectives in the context of fascist modernism. In an age of rapid technological advancement, with aviation as the centerpiece of a futurist mindset, the *Regia Aeronautica* held a special place among fascist modernists, whose ideas about future war found expression in the emotive imagery of the airplane. The fascists and Douhet were of one accord about future war as “machine war,” and the airplane was the offensive weapon “par excellence.”<sup>30</sup> Not surprisingly, then, when Mussolini became the first Minister of Air, the air force was declared independent and its budget was greatly increased.<sup>31</sup> As historian Claudio Segrè observed: “Because aviation developed so rapidly during the 1920s and 1930s, the *Aeronautica* acquired a reputation for being *the* fascist service, the one that Mussolini created from the ground up [emphasis in original].”<sup>32</sup>

As the principal instrument of war, intended to win the next war independent of surface action, Douhet believed that the air force should not be

used against enemy ground forces or in support of friendly ground forces. The power of an air force is manifestly strategic, never tactical; therefore, the idea of providing tactical support to the army or navy would be a waste of its strategic potential and, therefore, not merely unwise but harmful.<sup>33</sup> In contrast, Mecozzi believed that the air force is not in a position to fight and win a war in isolation from the other armed services; in fact, he argued that it would be more difficult for the air force to contribute to victory if it did not cooperate with surface forces. While the main objective for the army and navy is to defeat the equivalent enemy ground and maritime forces, the air force must seek to defeat enemy air forces while at the same time contributing to the defeat of enemy armies and navies.<sup>34</sup> To do this, the air force must cooperate with the army and navy.

Despite his opposition to Douhet’s propositions, Mecozzi was, in the end, an advocate for air power, but expressed concern that reluctance on the part of the air force to cooperate with the other services could very well compromise its autonomy. His was a more holistic view. The armed forces shared a common goal—victory—and given this fact, the air force must act autonomously but also as part of a larger whole.<sup>35</sup> Therefore, while Douhet argued for a “progressive decrease of land and sea forces, accompanied by a corresponding increase of aerial forces until they are strong enough to conquer the command of the air,” Mecozzi posited the creation of a balanced air force, one capable of cooperating closely with the other services to achieve decisive results while at the same time defending them from enemy air attack.<sup>36</sup> In a manner similar to Slessor, he wrote: “Let us mass together air and ground forces in the place and at the time that are decisive.... While the air force inflicts decisive damage on the enemy, we should not allow the enemy to inflict damage on our sea and ground forces.”<sup>37</sup> Mecozzi stressed the continued importance of close cooperation among the armed forces in a manner anticipating modern “joint” warfighting doctrine.<sup>38</sup> Strategy would determine how the services would execute their roles and missions as well as the extent to which one service or another would play the dominant or a supporting role.

Mecozzi went to some lengths to define “fields of action of the armed forces.”<sup>39</sup> The navy and the army had bi-dimensional fields of action respectively—that is, air-sea and air-ground—both requiring close cooperation with the air force. In Mecozzi’s view, it would be wrong and potentially disastrous for the air force to eschew such interconnectedness. Admittedly, the air force has an exclusive and very extended field of action—the air—but the army and the navy rely on the air force to maximize their own combat power and the air force must not ignore this fact.<sup>40</sup>

When the air force cooperates with the other services, it can play either a leading or a supporting role. According to Mecozzi, whenever the air force cooperates in a leading role, the air force commander should be in charge of overall operations. On the other hand, when cooperating in a supporting role,



This Piaggio P.108 of the 274th squadron was flown to southern Italy after the armistice on Sept. 10, 1943.

**MECOZZI BELIEVED THAT A MIX OF FIGHTER, GROUND ATTACK, AND BOMBERS WAS BEST, WITH GROUND-ATTACK OR "ASSAULT" AVIATION BEING THE PRIMARY ARM OF THE AIR FORCE**

either the navy or the army commander should be in charge of the campaign.<sup>41</sup> To facilitate this command and control framework, Mecozzi believed the *Regia Aeronautica* should comprise two branches: an Air Corps (*Armata Aerea*), responsible for executing cooperative missions with the air force in a leading role (what Mecozzi described as a "non auxiliary role"), and a permanent Auxiliary Air Force. On occasion, however, the Air Corps would deploy in auxiliary cooperative missions.<sup>42</sup> In those cases where the services would operate autonomously owing to geographic separation or some other unique circumstance, Mecozzi asserted that command of all operations should be assigned to a supreme theater commander.<sup>43</sup> Thus, in contrast to Douhet, Mecozzi clearly did not believe in the dominance of the air force in future war; rather, he emphasized that the air force was an equal partner and, depending on the character of the conflict, strategy, etc., might take the lead or support the other services. But in all cases the air force would cooperate with the other services.<sup>44</sup>

Although all of Mecozzi's books and essays were thought-provoking, two books, *Aviazione d'Assalto* (1933) and *Quel che l'Aviatore d'Assalto Deve Sapere* (1936), stand out.<sup>45</sup> As detailed in these works, Mecozzi believed that a mix of fighter, ground attack, and bombers was best, with ground-attack or "assault" aviation being the primary arm of the air force. Bombers (which Douhet believed were the only truly useful aircraft) would complement assault aviation by destroying high value targets, particularly at the very beginning of the conflict. To that end, bombardment aviation would strike targets located deep behind enemy lines, while assault aviation provided close support to the ground forces.

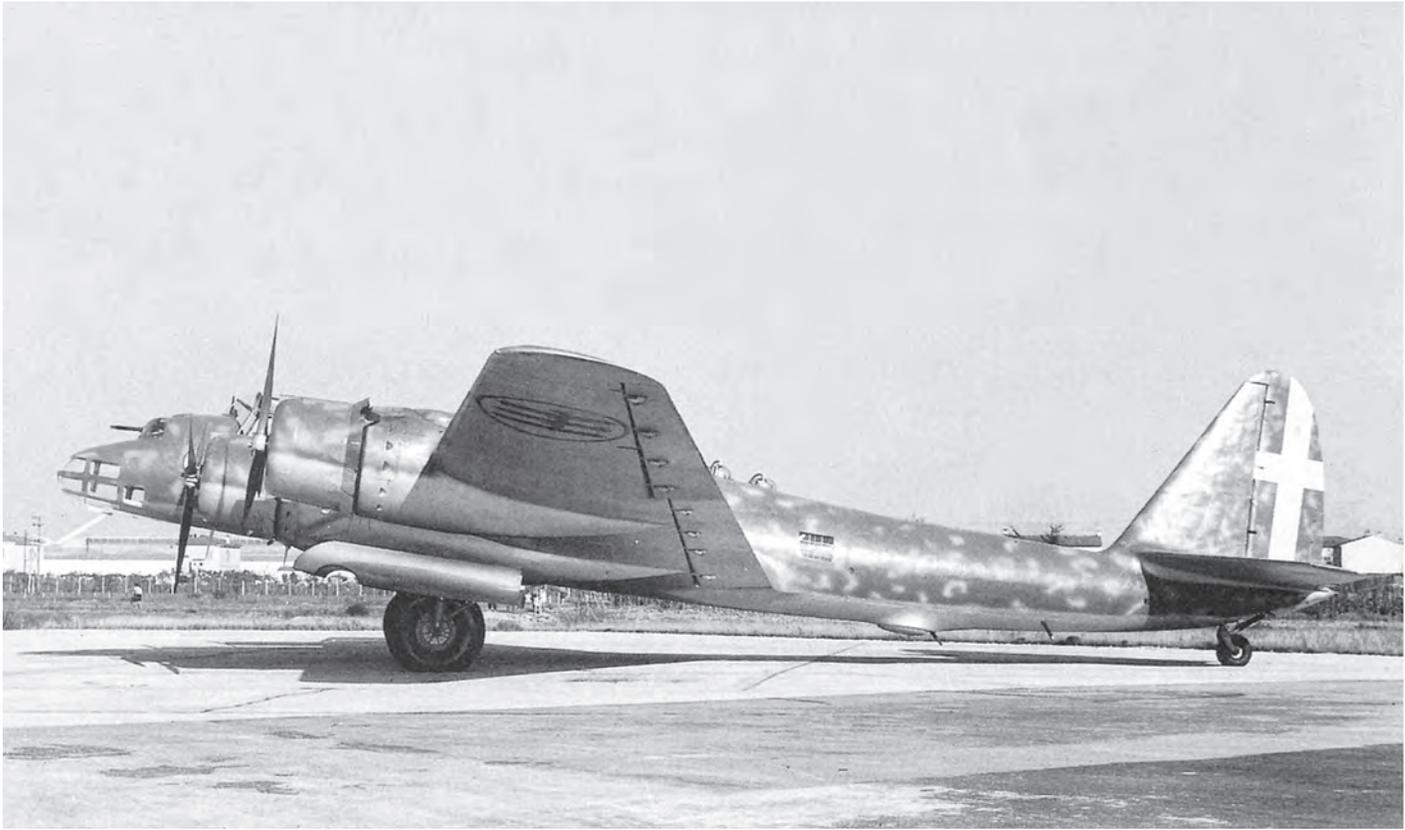
Mecozzi was very detailed in identifying troops, depots, lines of communication, command posts, and other targets for air attack. The aim was to isolate the battlefield, that is, to cut off enemy forces engaged with friendly forces by dislocating command and control and severing lines of communication and supply with the overall objective

to severely damage the enemy's ability to fight.<sup>46</sup> Assault aviation would attack enemy ground forces engaged in the battle whenever long-range weapons such as artillery could not effectively be brought to bear.<sup>47</sup> In this regard, he wrote: "Assault aviation will deploy in support of ground forces engaged on the battlefield, both intervening with its own fire where the land weapons cannot strike or where their action is too weak; and where necessary to contribute to the exploitation of a success, to prevent the enemy from reorganizing or to regroup."<sup>48</sup>

As a result of Mecozzi's emphasis on assault aviation and his technological specifications for the ideal airplane were significantly different from those proposed by Douhet. Instead of very large, long-range aircraft capable of fighting their way to the heart of the enemy state,<sup>49</sup> Mecozzi advocated the use of small, light, fast, and agile multi-role aircraft, able to fly very close to the ground in order to conduct air-to-ground attacks.<sup>50</sup> Mecozzi's principal criticism of large, high altitude bombers was their inability to adequately defend themselves as well as their excessive fuel consumption, low precision, poor maneuverability, structural complexity, and high cost.<sup>51</sup> As described in *Quel che l'Aviatore d'Assalto Deve Sapere*, Mecozzi asserted that aircraft comprising assault aviation could adequately serve as a substitute for or complement bombardment aviation as well as fighter and reconnaissance aviation.<sup>52</sup> In that regard, he maintained that assault aviation was most suitable to operate jointly with the other armed forces, performing multiple tasks including "counter-aviation."<sup>53</sup> Thus, ever mindful of cooperation between the services, Mecozzi argued the need for a unified doctrine of war in order that one service might not "enslave" the others.<sup>54</sup>

Mecozzi's vision, with its emphasis on close cooperation, appeared to some to be "tactical" in orientation. However, Mecozzi resisted the idea that his vision of assault aviation was tactical in outlook and expressed concern that the tactical label denied the impact that battlefield actions have on the strategic level of war.<sup>55</sup> Mecozzi explained that every action is tactical when it occurs; what ultimately defines whether an action is tactical or strategic is its effect. Indeed, even though an action might be purely tactical in execution, its consequences might be strategic. Therefore, the action was strategic by definition.<sup>56</sup> In a fashion anticipating modern "effects-based operations," Mecozzi argued that the platform, range, and target mattered little except in terms of its effect. An air strike might at first appear to have solely tactical consequences, but the cascading effects might ultimately affect the outcome of the war. With the preceding as axiomatic, Mecozzi argued that the air force must identify and prioritize targets in order to achieve campaign objectives in support of the war effort.<sup>57</sup> Of the many important targets he put forward in this regard, among the most important were enemy armed forces already deployed rather than "potential" forces.<sup>58</sup>

Aside from roles and missions and any distinc-



The Piaggio P.108 was the only four-engine heavy bomber used by the Regia Aeronautica during World War II, and was a development of the earlier underpowered and wooden-structured P.50-II. Here is the Piaggio P.108 Prototype MM.22001, with the green and ochre camouflage, in 1940.

**“CARPET BOMBING” WAS UNWISE FOR THREE REASONS: GEOGRAPHY, ECONOMY, AND EFFECTIVENESS**

tion between tactical and strategic targets, one of the more interesting points of divergence between Douhet and Mecozzi concerned the role of civilians in future war. In *The Command of the Air*, Douhet asserted that “the battlefield will be limited only by the boundaries of the nations at war.”<sup>59</sup> In future wars, therefore, civilians would be combatants and consequently would be legitimate targets for aerial attack. In Douhet’s words, “There will be no distinction any longer between soldiers and civilians. The defenses on land and sea will no longer serve to protect the country behind them; nor can victory on land or sea protect the people from enemy aerial attacks unless that victory insures the destruction, by actual occupation of the enemy’s territory, of all that gives life to his aerial forces.”<sup>60</sup>

For many years Mecozzi was in nominal agreement with Douhet that civilian targets should be targeted from the air. But there is some evidence that he took this position primarily to deflect criticism regarding his ideas about assault aviation.<sup>61</sup> Nevertheless, his early writings betrayed no humanitarian impulses with respect to the combatant status of civilians. In May 1930, for example, writing under the pseudonym “Volucer,” Mecozzi wrote an essay in *Le Forze Armate* in which he concurred with the Clausewitzian assertion concerning the irrelevance of humanitarian factors in the conduct of war.<sup>62</sup> Likewise, in *Quel che l’Aviatore d’Assalto Deve Sapere*, Mecozzi considered it acceptable to attack civilian targets if such an operation was executed in retaliation for a previous enemy attack against friendly civilians.<sup>63</sup> In that regard, assault aviation could be used alongside bombardment aviation to attack civilians in large cities and

against small villages where “civil discipline” would be weak and psychological vulnerability greater.<sup>64</sup>

However, as described in *Guerra agli Inermi e Aviazione D’assalto* (1965), Mecozzi stated that, as early as 1922, he already had misgivings about waging war against the “unarmed.” He wrote: “It was then when I started to think about assault aviation, not only as conceptually opposite to the bombardment aviation, but also as the only suitable tool in an alternative of strategy in which the most important place had to be assigned to the aerial struggle against the armed forces and not against unarmed people, and above all to reassure fellow soldiers that there was no need to associate themselves with the crime of aerial terrorism.”<sup>65</sup> Thus, in rejecting his previous position, Mecozzi now asserted that direct targeting of civilians could not be justified by the idea that they supported the war effort. Moreover, he specifically rejected the argument that targeting civilians would be morally justified because it might shorten the war.<sup>66</sup>

The above said, Mecozzi’s disagreement with Douhet about targeting civilians was driven by motives other than exclusively humanitarian concerns. In his view, “carpet bombing” was unwise for three reasons: geography, economy, and effectiveness.<sup>67</sup> Due to its position on the European continent, especially with many major cities close to its northern border, Italy was especially vulnerable to aerial attack from neighboring countries and an attack on enemy civilians would undoubtedly provoke aerial retaliation. Mecozzi was also aware that the Italian economy could not produce an air force capable of defending Italy while at the same time inflicting catastrophic damage on an enemy.<sup>68</sup>

Farman 12, of the type that Mecozzi first learned to fly at Malpensa Pilots School at Varese, outside Rome. (Source: San Diego Air and Space Museum.)



**FINALLY, MECOZZI BELIEVED THAT THE MASSIVE, INDISCRIMINATE BOMBING OF CIVILIANS WOULD NOT PROVE EFFECTIVE IN BREAKING THE MORALE OF AN ENEMY**

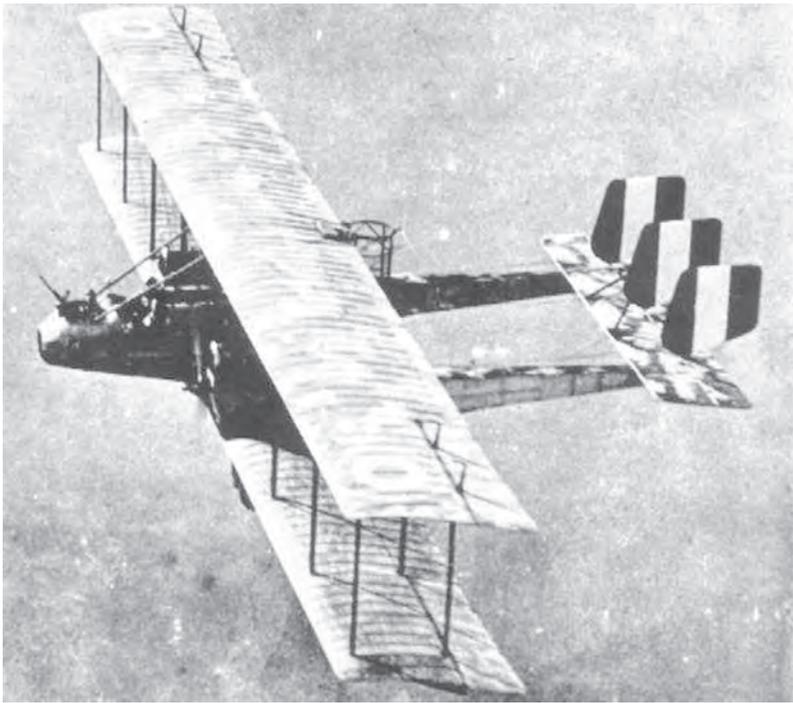
Finally, Mecozzi believed that the massive, indiscriminate bombing of civilians would not prove effective in breaking the morale of an enemy.<sup>69</sup> This outlook perhaps had its genesis with the Italian experience during the Spanish Civil War.

During the Spanish Civil War (1936-1939), the Italian air contingent participated in the bombing of Barcelona in March 1938, which resulted in massive civilian casualties. As historian James S. Corum has rightly noted, “Contrary to the predictions of Douhet . . . civilian morale in Barcelona did not collapse. In fact, the Italian strategic bombing campaign strengthened the morale of the Spanish Republicans, which had been wavering prior to this point in the war. The bombing of civilian targets enraged the Republicans and helped to harden resistance at the front.”<sup>70</sup> Interestingly, the performance of the *Regia Aeronautica* during the Spanish Civil War was significantly better than that of the *Regio Esercito*, and the *Aeronautica* emphasized and was much more effective in providing close support to the ground forces.<sup>71</sup> Likewise, during the campaign in Ethiopia from 1935-1939, the use of air power was more in line with what Mecozzi had advocated for over a decade, especially with respect to support of the ground forces, scouting, and reconnaissance.

In the latter portion of his life, Mecozzi excoriated the “perverse” targeting of civilian targets.<sup>72</sup> “I am convinced,” he wrote, “that Douhet’s ideas are

like an amazing drug, an alkaloid that gives hallucinations.” He went on to describe as a “professional aberration” the idea that terrorizing a population rather than defeating the enemy armed forces was a proper war aim.<sup>73</sup> “Douhet’s doctrine is based upon a voluntary choice to fight unarmed people . . . In almost every page of his work aerial terrorism is recommended, urged, praised and exalted.”<sup>74</sup> This was unthinkable given that, in Mecozzi’s view, civilians are neither responsible for nor guilty of war. With a cynicism born of his Italian cultural heritage, Mecozzi argued that governments are responsible for war and that “people never have the governments that they deserve, but they have those that they do not successfully avoid.”<sup>75</sup> To Mecozzi, only political leaders, as opposed to the people, are responsible and guilty and worthy of punishment.<sup>76</sup> Thus, “In a future war, the Air Force must aim only to overcome the enemy armed forces, with its four tasks: scouting, attacking, defending, and transportation.”<sup>77</sup>

Although the debate between Mecozzi and Douhet was intellectually stimulating, it was arguably marginal to the doctrinal development of the *Regia Aeronautica*. Independent scholar James Sadkovich has noted that some analysts “have traced the *Regia Aeronautica*’s apparently lackluster performance [in World War II] to a doctrinal dispute between partisans of Giulio Douhet’s strategic bombing theories and proponents of Amedeo



The Caproni Ca. 5, an Italian heavy bomber from the era of the First World War and after.

**ALTHOUGH BOTH MEN SHARED THE BELIEF THAT AIR POWER IS THE KEY TO VICTORY IN WAR, THEIR VIEWS DIVERGED ON HOW IT SHOULD BEST BE EMPLOYED**

Mecozzi's doctrine of using assault aircraft (ground attack aircraft) in cooperation with the other services.<sup>78</sup> However, in his biography of Italo Balbo, Claudio Segrè observed: "In developing a doctrine for the *Aeronautica*, Balbo was a pragmatist. In certain [aspects] of his aerial cruises and in maneuvers such as those of 1931, he experimented with Douhetian mass flight and exercises in strategic bombing. Yet, he also supported those, like General Amedeo Mecozzi, who advocated tactical use of air power. Both in his declarations and his policies Balbo made it abundantly clear that he was not committed to either side."<sup>79</sup> But although Balbo did not fully accept all of either Douhet's or Mecozzi's propositions, he did support Douhet's assertions regarding air force independence. As a result, he made a strong case for increasing the budget of the *Regia Aeronautica* and prevented the *Regia Marina* and the *Regio Esercito* from developing their own air forces.<sup>80</sup> For that reason, the *Regia Marina* did not equip the fleet with aircraft carriers, the negative consequences of which became evident during World War II when Italian convoys bound for Libya became easy prey for the British fleet in the Mediterranean. In the end, Balbo considered Douhet a useful foil to increase Italy's air mindedness and to acquire more resources for the expansion of the air arm.<sup>81</sup> According to Corum, "Although Balbo often praised Douhet, unofficial prophet of Italian air doctrine, his reverence for Douhet was more for show than for real."<sup>82</sup>

Until 1930, Balbo candidly admitted that the air force had not yet developed an adequate doctrine. He recognized the need for clarity among the different ideas being expressed concerning air power and ordered a series of exercises to sort out the most promising doctrinal concepts.<sup>83</sup> Thus, "by the outbreak of World War II, the Italian air force boasted a balanced force of bombers and fighters, as

well as assault and reconnaissance aircraft."<sup>84</sup> According to Italian air force General Domenico Ludovico, "In June 1940, at the beginning of the war in Italy, with the exception of auxiliary aviation (equipped with a total of 900 airplanes), the strength of the Aerial Army included 995 bombers (although double or triple engines of modest power) and 574 fighters."<sup>85</sup> General Remo Magistrelli, who had served as a pilot under Mecozzi, similarly noted that just before the beginning of World War II, "the *Regia Aeronautica*, despite the presence of many fervent followers of Douhet . . . was far removed from Douhet's doctrine."<sup>86</sup> But as history attests, the Italian air force may have been a balanced force but it was composed of woefully inadequate aircraft.

In the final analysis, the debate between Douhet and Mecozzi was confined to Italy and had little to no impact on air power developments elsewhere in Europe, the United States, or Japan. Mecozzi's work was then, and remains today, greatly overshadowed by Douhet's work and has become all but forgotten to history. This is ironic given that Mecozzi's ideas in many ways anticipated modern U.S. Air Force doctrine and thinking. But whereas Douhet's book became a text studied by many generations of pilots in Italy and abroad, Mecozzi's books are the subject of study of only a small number of Italian scholars. This is regrettable, for the debate between Mecozzi and Douhet enlightens our understanding of the origins of air power theory, its development, and implications for the future. Moreover, much of the debate between Douhet and Mecozzi anticipated current debates about everything from effects-based targeting to the proper role of air power in war. At a minimum, Mecozzi's ideas help us to better understand the development of air power in Italy between the world wars.

Although both men shared the belief that air power is the key to victory in war, their views diverged on how it should best be employed. According to Claudio Segrè, Douhet was a prophet: "A prophet points to the future, alerting his people to judgement or catastrophe or danger. Douhet did all these things and served all these functions for his fellows Italians and his military colleagues."<sup>87</sup> In that sense, Douhet properly emphasized the central role that air power would play in future war. However, "in Douhet's world, all is ideal. Bombers always get through. Attrition and interception are not serious obstacles. Crews and equipment work perfectly. They drop perfect bomb loads: no duds, no misses, no overlap. All the targets are of uniform construction."<sup>88</sup>

For his part, Mecozzi challenged Douhet's vision at a time when Douhet's ideas were very popular among the Italian elite. Nevertheless, Mecozzi stood his ground and over time his own ideas evolved and matured and influenced the development of Italian military air power. In many ways his ideas were ahead of their time, emphasizing joint operations at the campaign level to achieve a desired strategic endstate, and making no distinction between tactical and strategic airpower based

on platform, range, or target. Moreover, Mecozzi's assertions regarding air superiority as opposed to "command of the air" were much more realistic and substantially agreed with modern doctrinal concepts regarding air superiority.<sup>89</sup> Likewise, Mecozzi's ideas regarding assault aviation anticipate the mission profiles of modern fighter-bombers around the globe. Arguably, in some ways modern multi-role fighter-attack aircraft resemble Douhet's battleplane, but in terms of the roles and missions they perform they are decidedly more akin to

Mecozzi's concept of assault aviation, especially in terms of air-to-ground operations.

Finally, Mecozzi's deep aversion to "war against the unarmed" is interesting in light of today's emphasis on the avoidance of collateral damage, particularly with respect to reducing civilian casualties. But perhaps the most important distinction between Mecozzi and Douhet was that Mecozzi better understood that the value of a theory and doctrine depends more upon its applicability and practicality than its theoretical or logical perfection.<sup>90</sup> ■

## NOTES

1. See William C. Sherman, *Air Warfare* (1926; reprint, Maxwell Air Force Base, Alabama: Air University Press, April 2002). Sherman was more intellectual and less zealous in his approach than Mitchell, which probably accounts for his lack of notoriety and the relative obscurity of his book. Regrettably, there is no book-length biography of Sherman; however, an excellent treatment of Sherman's impact on air power theory can be found in Serge Gadal's *La Guerre Aérienne Vue Par William Sherman: De L'histoire à la Doctrine* (Paris: Institut de Stratégie Comparée, 2006).
2. Biographical details may be found at [www.aeronautica.difesa.it](http://www.aeronautica.difesa.it).
3. See Amedeo Mecozzi, "Fra Programmi e Programmi aeronautici," *Gazzetta dell'Aviazione*, December 21, 1920.
4. Ferruccio Botti, "Tra Douhet e Mecozzi: La Teoria Del Potere Aereo Nel Pensiero e Nell'Azione di Italo Balbo," in Carlo Maria Santoro, ed., *Italo Balbo: Aviazione e Potere Aereo. Atti del Convegno Internazionale nel centenario della nascita* (Roma: Stato Maggiore dell'Aeronautica, Ufficio Storico, 1998), 373.
5. Michael D. Pixley, "False Gospel for Airpower Strategy? A Fresh Look at Giulio Douhet's 'Command of the Air' ", *Chronicles Online*, 14 July 2005.
6. Ferruccio Botti, ed., *Amedeo Mecozzi: Scritti Scelti*, Vol. I (1920 – 1943) (Roma: Stato Maggiore Aeronautica, 1999), xxi.
7. Claudio Segrè, "Giulio Douhet: Strategist, Theorist, Prophet?", *Journal of Strategic Studies*, Vol 15, no. 3, 1992: 354.
8. Botti, ed., *Amedeo Mecozzi: Scritti Scelti*, Vol. I, xx.
9. Ferruccio Botti and Mario Cervelli, *La Teoria della Guerra Aerea in Italia dalle Origini alla Seconda Guerra Mondiale (1884 – 1939)* (Roma: Stato Maggiore Aeronautica, Ufficio Storico, 1989), 360.
10. Giulio Douhet, *The Command of the Air*, trans Dino Ferrari (1942; reprint, Washington D.C.: Office of Air Force History, 1983), 23, 28.
11. *Ibid.*, 140. See also Remo Magistrelli, "La Costituzione dell'Aeronautica Italiana fu Influenzata dal Pensiero di Douhet?" *Rivista Aeronautica*, no. 6, 1972, in Botti, ed., *Amedeo Mecozzi: Scritti Scelti*, Vol. II (1945 – 1970) (Roma: Stato Maggiore Aeronautica, Ufficio Storico, 1999), 347.
12. Giuseppe Ciampaglia, "Amedeo Mecozzi," *Storia Militare*, no. 110, Nov. 2002: 40.
13. Ferruccio Botti, "Il Pensiero di Amedeo Mecozzi negli Anni '20: Origini e Prospettive dell'Aviazione d'Assalto," *Rivista Aeronautica*, no.1, January 1989: 5.
14. Ranieri Cupini, "L'Aviazione d'Assalto di Ieri e di Oggi," *Rivista Aeronautica*, no. 2, 1954, in Botti, ed., *Amedeo Mecozzi*, Vol. II, 299.
15. *Ibid.*
16. Douhet, *The Command of the Air*, 49.
17. Cupini, "L'Aviazione d'Assalto di Ieri e di Oggi, 299-300.

18. Douhet, *The Command of the Air*, 55.

19. James S. Corum, "Airpower Thought in Continental Europe between the Wars," in Phillip S. Meilinger, ed., *The Paths of Heaven: The Evolution of Airpower Theory* (Maxwell Air Force Base, Alabama: Air University Press, 1997), 160.

20. Amedeo Mecozzi, "Il compito di contro aviazione," *Rivista Aeronautica*, May 1926, and "I compiti di azione autonoma," *Rivista Aeronautica*, June 1926. In contrast, Douhet asserted that "the use of anti-aircraft guns is a mere waste of energy and resources." Douhet, *The Command of the Air*, 55.

21. According to Mecozzi: "If the enemy's [air force] is more powerful, then the land attack prevails, while the two air forces try to attain command of the air. If command of the air could be achieved within a few hours as the air-strategist [Douhet] suggests, the enemy's ground forces would not be able to execute the attack. Yet this assumption is unsound, because the enemy acts in the sky, trying at least to slow down our conquest. Under these conditions, our ability to resist on land must be increased and not decreased." Amedeo Mecozzi in *Le Sorti Progressive della Aviazione Militare* (Roma: Società Multigrafica Editrice, 1970), 28.

22. Botti and Cervelli, *La Teoria della Guerra Aerea in Italia*, 364-65.

23. Amedeo Mecozzi, *Guerra agli Inermi ed Aviazione d'Assalto* (Roma: Libreria dell'Orologio, 1965), 309. In addition, Mecozzi makes the remarkable claim that, in terms of ends, ways, and means, command of the air was not Douhet's real goal, but rather the infliction of mass casualties on the enemy population. In that regard he wrote: "The air-strategist [Douhet] believes the command of the air is a means and not a goal since his real goal is victory through massacre of the population." See Mecozzi, *Le Sorti Progressive della Aviazione Militare*, 29.

24. *Ibid.*, 24. During WWII, Slessor commanded the Royal Air Force (RAF) Coastal Command. After the war, he went on to become Marshal of the RAF. In his book, Slessor argued that air superiority was "only a means to an end." Against what we would today call a "peer competitor," he maintained that the most that could be hoped for was to throw the enemy air force on the defensive and to reduce the threat of enemy air action to a minimum. Thus, air superiority is the method not the object; or, as Slessor wrote: "Method, not Intention: a necessary step to achieve the object, but not the object." J. C. Slessor, *Air Power and Armies* (London: Oxford University Press, 1936), 3-7.

25. Botti and Cervelli, *La Teoria della Guerra Aerea in Italia*, 365.

26. Botti, "Il Pensiero di Amedeo Mecozzi negli Anni '20, 5.

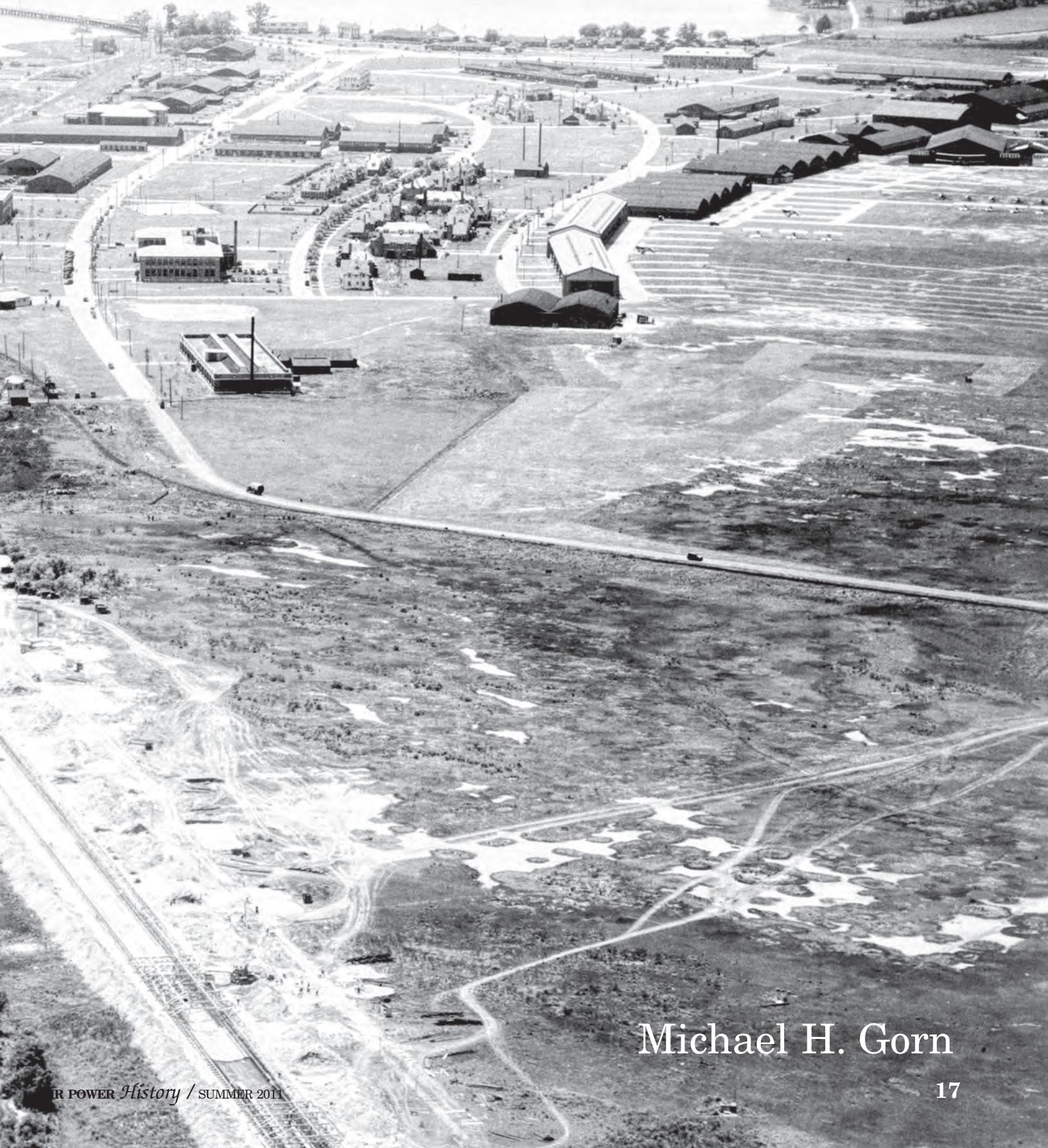
27. Antonio Duma, "Il Douhet ed il Mecozzi Oggi," *Rivista Aeronautica*, no.s 8-9, 1968, in Botti, ed., *Amedeo Mecozzi*, Vol. II, 314.

28. Richard Estes, "Giulio Douhet," *Airpower Journal*, Winter 1990, Vol. 4, no. 4.
29. Douhet, *The Command of The Air*, 32.
30. *Ibid.*, 15. See also: Giulio Douhet, "L'Uomo e le machine," *Gazzetta del Popolo*, October 7, 1914, as reprinted in Douhet's posthumous collection, *Profezie di Cassandra* (Genoa, 1931), 207-11. See also Azar Gat, *A History of Military Thought: From the Enlightenment to the Cold War* (London: Oxford University Press, 2001, ch. 3, "The Sources of Douhetism," passim.
31. Azar Gat, *Fascist and Liberal Vision of War: Fuller, Liddell Hart, Douhet, and Other Modernists* (Oxford: Clarendon Press, 1998), 69.
32. Claudio Segré, *Italo Balbo: A Fascist Life* (Berkeley: University of California Press, 1987), 149.
33. In the first edition of *The Command of the Air* (1921), Douhet acknowledged the utility of "auxiliary" aviation, that is, aviation dedicated to supporting surface forces. However, in the second edition (1927) he claimed that he had been deliberately conciliatory in the earlier version so as to avoid provoking controversy. In the later edition he made no such concession and argued that, in truth, "auxiliary aviation is worthless, superfluous, and harmful: worthless because auxiliary aviation cannot gain command of the air; superfluous because once command of the air is obtained, a portion of the air force can perform auxiliary roles; and harmful because it diverts airpower from its "essential purpose." Douhet, *The Command of The Air*, 94, 100.
34. Botti and Cervelli, *La Teoria della Guerra Aerea in Italia*, 365.
35. *Ibid.*, 13.
36. Douhet, *The Command of The Air*, 30.
37. *Le Sorti Progressive della Aviazione Militare*, 24.
38. Amedeo Mecozzi, "Aviazione Cooperante," *Rivista Le Forze Armate*, December 23, 1927.
39. Botti and Cervelli, *La Teoria della Guerra Aerea in Italia*, 368.
40. *Ibid.*
41. *Ibid.*
42. *Ibid.*
43. Ferruccio Botti, "Mecozzi 1939 – 1941: Luci ed Ombre di una Dottrina," *Rivista Aeronautica* no. 6, 1986: 6.
44. Botti, "Il Pensiero di Amedeo Mecozzi negli Anni '20," 3.
45. Amedeo Mecozzi, *L'Aviazione d'Assalto*, Ministero dell'Aeronautica (Roma, 1933), and Amedeo Mecozzi, *Quel che l'Aviatore d'Assalto deve Sapere* (Roma: Società Anonima Poligrafica Italiana, 1936).
46. Ranieri Cupini, "L'Aviazione d'Assalto di Ieri e di Oggi," *Rivista Aeronautica*, no. 2, 1954, in Botti, ed., *Amedeo Mecozzi*: Vol. II, 306.
47. *Ibid.*
48. *Ibid.*
49. The *sine qua non* of Douhet's air force was the "battleplane," an aircraft capable of aerial combat as well as long-range bombardment. If an air force were comprised solely of battleplanes, then "the same personnel could employ all the armament of the planes in aerial battle in the first phase of action, then strike against surface targets in the second phase." Douhet, *The Command of the Air*, 118.
50. Botti and Cervelli, *La Teoria della Guerra Aerea in Italia*, 363.
51. Botti, "Il Pensiero di Amedeo Mecozzi negli Anni '20," 4.
52. Mecozzi, *Quel che l'Aviatore d'Assalto deve Sapere*, 3.
53. *Ibid.*, 86.
54. *Ibid.*, 13.
55. Mecozzi, *Guerra agli Inermi ed Aviazione d'Assalto*, 306.
56. *Ibid.*
57. Ferruccio Botti, "Ancora su Amedeo Mecozzi," *Storia Militare*, no.116, May 2003: 56.
58. Using the term "potential," Mecozzi meant weapons still in the factories and soldiers not yet enlisted. Giulio Costanzi, "Memento tra Passato ed Avvenire," *Rivista Aeronautica*, no. 2, 1953, in Botti, ed., *Amedeo Mecozzi*, Vol. II, 283.
59. Douhet, *The Command of The Air*, 10.
60. *Ibid.*
61. Antonio Pelliccia, "L'Ultimo Assalto," *Rivista Aeronautica*, no. 9, 1970, in Botti, ed., *Amedeo Mecozzi*, Vol. II, 322.
62. Botti and Cervelli, *La Teoria della Guerra Aerea in Italia*, 368. For example, Clausewitz wrote: "Kind-hearted people might of course think there was some ingenious way to disarm or defeat an enemy without too much bloodshed, and might imagine this is the true goal of the art of war. Pleasant as it sounds, it is a fallacy that must be exposed: war is such a dangerous business that the mistakes which come from kindness are the very worst." Carl von Clausewitz, *On War*, ed and trans Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1976), 75.
63. Amedeo Mecozzi, *Quel che l'Aviatore d'Assalto deve Sapere* (Roma: Società Anonima Poligrafica Italiana, 1936), 89.
64. *Ibid.*
65. Mecozzi, *Guerra agli Inermi ed Aviazione d'Assalto*, 97-8.
66. Ranieri Cupini, "L'Aviazione d'Assalto di Ieri e di Oggi," *Rivista Aeronautica*, no. 2, 1954, in Botti, ed., *Amedeo Mecozzi*, Vol. II, 300.
67. Ferruccio Botti, "Il Pensiero di Amedeo Mecozzi negli Anni '30 – la Concezione Totalitaria dell'Aviazione d'Assalto," *Rivista Aeronautica* no. 4, 1989: 3.
68. *Ibid.*, 9.
69. *Ibid.*, 3.
70. James S. Corum, "The Spanish Civil War: Lessons Learned and Not Learned by the Great Powers," *The Journal of Military History*, Vol. 62, no. 2, April 1988: 319.
71. *Ibid.*, 327-9.
72. Mecozzi, *Guerra agli Inermi ed Aviazione d'Assalto*, 224.
73. *Ibid.*, 294.
74. *Ibid.*, 45.
75. *Ibid.*, 74.
76. Mecozzi, *Le Sorti Progressive della Aviazione Militare*, 35.
77. *Ibid.*, 5.
78. James J. Sadkovich, "The Development of The Italian Air Force Prior to World War II," *Military Affairs*, July 1987.
79. Segré, *Italo Balbo*, 154.
80. Sadkovich, "The Development of The Italian Air Force Prior to World War II."
81. Botti, *Amedeo Mecozzi*, Vol. I, x.
82. Corum, "Airpower Thought in Continental Europe between the Wars," 160.
83. Giorgio Rochat, *Balbo* (Torino: Unione Tipografico Torinese, 1986), 146-7.
84. Corum, "Airpower Thought in Continental Europe between the Wars," 160.
85. Domenico Ludovico, "Teoria e Realtà della Guerra Aerea," *Rivista Aeronautica*, nos. 1-2, 1974, in Botti, ed., *Amedeo Mecozzi*, Vol. II, 373.
86. Remo Magistrelli, "La Costituzione dell'Aeronautica Italiana fu Influenzata dal Pensiero di Douhet?," *Rivista Aeronautica*, no. 6, 1972, in Botti, ed., *Amedeo Mecozzi*, Vol. II, 347.
87. Segré, "Giulio Douhet: Strategist, Theorist, Prophet?," 352.
88. *Ibid.*
89. Antonio Duma, "Il Douhet e il Mecozzi Oggi," in Botti, ed., *Amedeo Mecozzi*, Vol. II, 315.
90. Ferruccio Botti, "Il Pensiero di Amedeo Mecozzi negli Anni '30 – la Concezione Totalitaria dell'Aviazione d'Assalto," *Rivista Aeronautica* no. 4, 1989: 9.

# The N.A.C.A. and its Military Patrons during



# ing the Golden Age of Aviation, 1915-1939



Michael H. Gorn

(Overleaf) An aerial view of the N.A.C.A.'s Langley Laboratory shot in 1930, showing the immense Full Scale (30 by 60 foot) Wind Tunnel (just above the center, slightly to the left) then under construction. (All photos courtesy of NASA.)

During the period just before and after its creation, the National Advisory Committee for Aeronautics (N.A.C.A.) found itself both the victim and the beneficiary of Washington, D.C. politics. Despite its later success and acceptance, at its start the N.A.C.A. seemed anything but preordained. In fact, it happened more or less accidentally, and prospered at times because of its military patrons, and at other times in spite of them.

### Neither Friends nor Enemies: The N.A.C.A. and the Army

Not long after the shock of the Wright Brothers' first flight had worn off, and the practical implications had sunk in, calls began to be heard for an American aviation policy, embodied in a national aeronautical laboratory. The American Aeronautical Society organized its first meeting in 1911 with this concern in mind. Its members discussed the prospect of a new Smithsonian aviation laboratory underwritten by federal funds, to be built up from the abandoned facility of former Smithsonian Secretary and aeronautical researcher, Samuel P. Langley. The Smithsonian tried in 1913 to revive the old laboratory, but failed to win Congressional backing. Still, Smithsonian Secretary Charles D. Walcott continued to press for an aeronautical laboratory—if not at the Smithsonian, than elsewhere. Eventually Walcott's appeals, the advances of the Europeans in establishing their own national aeronautical laboratories, and the onset of World War I moved Congress to action—of sorts.

From the very first moment of its existence, the

N.A.C.A. found itself entwined with the armed forces. The law enacting it passed not on its own merits, but rather as a rider to the Naval Appropriations Act of March 3, 1915. Far from being created with fanfare, the N.A.C.A.'s birth certificate consisted of a meager two-paragraph statement, none of which mentioned a laboratory. In it, Congress furnished a budget of just \$5,000 and empowered the President of the United States to appoint twelve individuals to sit on the N.A.C.A.'s governing, or Main Committee. The legislation gave the N.A.C.A. an imposing but as yet unsubstantiated charter: to "supervise and direct the scientific study of the problems of flight, with a view to their practical solution, and to determine the problems which should be experimentally attacked, and to discuss their solution and their application to practical questions."<sup>1</sup>

When the act establishing the N.A.C.A. arrived on his desk, President Woodrow Wilson acted expeditiously to fill the positions on the Main Committee, which met for the first time on April 23, 1915. The rider allocated two seats to the War Department and two to the Navy Department; one each to the Smithsonian Institution, the National Bureau of Standards, and the U.S. Weather Bureau; and five to non-governmental agencies peopled by those familiar with aeronautical science or engineering. Once it met, the committee chose as its first chairman Army Brigadier General George P. Scriven, who as Chief of the Army Signal Corps oversaw U.S. Army aviation.<sup>2</sup>

Thus, not only did the N.A.C.A. legislation pass as a military appropriation, but the Main

Completed in 1918, this building is one of the first completed in the construction of the N.A.C.A.'s Langley Laboratory. It is surrounded by a bald, wet landscape that prevailed once work crews cleared and leveled the land.



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The first meeting of the N.A.C.A. Main Committee in 1915 shows its Chairman, General George Scriven (front row, center), in evident command. Although he occupied this position for only a brief time, he did much to nurture the new N.A.C.A.'s relationship with Army aviation.

**SCRIVEN SHREWDLY LINKED THE N.A.C.A.'S NEED FOR LAND TO THE ARMY'S NEED TO FIND A HOME FOR ITS OWN AERONAUTICAL RESEARCH CENTER, A MEASURE ALSO APPROVED BY CONGRESS**

Committee chose a career officer for its first leader. They chose well. At sixty-one years of age with almost forty years of service, Scriven brought a wealth of experience and know-how to the job. He applied his knowledge deftly, enabling the Army and the N.A.C.A. to serve their mutual interests. Scriven did so by striking a tacit bargain with the N.A.C.A. committee: if its members supported Army aviation's spending request before Congress (for training and a research center, as well as for aircraft purchases), Scriven promised for his part to back expanded N.A.C.A. budgets. "I believe," he wrote, "that nothing will better advance the cause of aeronautics in the United States than for this Advisory Committee to recommend and urge with all its authority the appropriations for the Army..." Evidently satisfied with the response, Scriven proposed for the President's 1917 budget a N.A.C.A. budget of \$85,000 (a seventeen-fold increase over the first year) for the "equipment of a flying field together with aeroplanes and suitable testing gear" as well as a "well-equipped laboratory specially suited to the solving of those problems [in aeronautics] which are sure to develop..."<sup>3</sup>

But Scriven did not stop there in his efforts, however self-interested, on behalf of the N.A.C.A. When Congress approved \$87,000 for the N.A.C.A.—\$53,580 of which to build a laboratory—Scriven shrewdly linked the N.A.C.A.'s need for land to the Army's need to find a home for its own aeronautical research center, a measure also approved by Congress. He appointed a board of military officers that reviewed fifteen prospective sites. They ultimately selected a 1,650-acre parcel just north of Hampton, Virginia, which the Army and the N.A.C.A. agreed to share.

General Scriven's chairmanship of the N.A.C.A. Main Committee lasted only a short time. He left in 1916, but his brief period there proved to be pivotal. The property near Hampton came to be known as Langley Field (in honor of Samuel Langley), and in June 1920 the N.A.C.A.'s Langley Memorial Aeronautical Laboratory opened its doors for research. The dedication ceremony unfolded, not unexpectedly, with military pomp. A 25-plane armada assembled by famed Air Service General Billy Mitchell flew overhead. (More about Mitchell below). But

this picture belied an increasing gulf that had opened between the N.A.C.A. and the Army. The initial period of collaboration ended with Scriven's departure.<sup>4</sup>

With the general gone and the bureaucratic counsel he offered the N.A.C.A. gone as well, the relationship with the Army became noticeably less amicable, despite the increasingly frequent and usually productive technical exchanges between the N.A.C.A. and the service during the 1920s and 1930s. To some extent, this deterioration might have been expected. Under the affable and canny leadership of the N.A.C.A.'s first Director of Research, George W. Lewis, the organization rapidly gained a sense of confidence and independence. A propulsion engineer with bachelor's and master's degrees from Cornell University, Lewis reported for work in 1919 and stayed until he resigned in 1947 due to failing health. Rather than manage the laboratory himself (he left that to an on-site Engineer-in-Charge), Lewis concentrated on the Washington, D.C. political landscape, making allies in the halls of Congress, as well as in the front offices of the Executive Branch bureaucracies. Lewis, therefore, shielded the young engineers at Langley from the intrigues of Washington, enabling them to pursue their research with maximum autonomy. They soon made breakthroughs in such areas as engine cowlings and airfoil design, among others. These discoveries brought international recognition, and with it, a feeling on the Langley campus that their work took a back seat to none. But Lewis realized that arrogance had to be curbed, and that a tightrope had to be walked: "If the NACA ever sets itself aside from the Army and Navy," he said, "it is a 'dead duck.'"<sup>5</sup>

Despite this admonition, misunderstandings with the Army began to emerge as early as the ground breaking for the N.A.C.A.'s laboratory. In its zeal to find a promising location for Langley Field, the Army selection committee overlooked a major obstacle—the Virginia Tidewater's sandy, flat, and wet terrain, which bristled with thick groves of evergreens and pines. Instead, the group concentrated on the region's overall geographic advantages: a location on the Chesapeake Bay that enabled unobstructed flying; a convenient water route to the nation's capitol via the Potomac River; a day's ride to Washington, D.C. by rail; and relatively mild year-round weather. The Smithsonian's Charles Walcott joined a three-man N.A.C.A. committee that further investigated the site, and perhaps influenced by General Scriven's strong support for the N.A.C.A. laboratory, expressed even greater enthusiasm than the Army.

*It has large areas of cleared land now under cultivation. The removal of a few trees, fences, and a little brush would give a clear field 2 miles or more in length by a half a mile in width. This area could be increased materially by the cutting of a few small groves of trees and brush. Most of the area under consideration for a site is about from 4 to 6 feet above mean tide, and where not naturally well drained,*

Set against the barren scene of early (1922) Langley Field, a work crew finishes construction of a Langley Laboratory hangar.

ARMY LEADERS... DECIDED TO TRANSFER THE ANTICIPATED AVIATION DEVELOPMENT CENTER FROM LANGLEY TO MCCOOK FIELD IN OHIO, AND SUBSEQUENTLY DESIGNATED LANGLEY FIELD FOR PILOT TRAINING



*could be drained without undue expense. The requirements being so fully met by the area north of Hampton, your committee strongly recommends that this site be secured as soon as practicable.*<sup>6</sup>

In reality, a pall of misery hung over the landscape undergoing preparation for Langley Field and the N.A.C.A. lab. Thomas Wolfe's fictional alter ego Eugene Gant, the hero of his largely autobiographical first novel *Look Homeward, Angel*, relates his desperate search for work in the Hampton Roads area during World War I. Broke and hungry, he wandered into a crude employment office where for \$80 a month he signed on to do office work and to supervise the laborers constructing the "Flying Field" in Hampton. He soon saw that "the gangs were of all races and conditions..." and included African-Americans from the Deep South, New York "Bowery bums, in greasy serge and battered derbies, toying distastefully with pick-handles that shredded their dirty calloused palms...drawing fishermen from the Virginia coast...and Italians, Swedes, Irishmen—part of the huge compost of America." Wolfe's character watched in disbelief as two dozen groups of men toiled under his surveillance, "grading, leveling, blasting from the spongy earth the ragged stumps of trees and filling interminably, ceaselessly, like the weary and fruitless labor of a nightmare, the marshy earth-craters, which drank their shoveled-toil without end."<sup>7</sup> One Army man on the scene described it as "nature's...cesspool" comprised of "the muddiest mud, the weediest weeds, the dustiest dust, and the most ferocious mosquitoes the world has ever known." As if to clinch the case against Langley, from September 1918 to January 1919, forty-six men on the work crews died from influenza. Indeed, the N.A.C.A.'s Executive Committee realized too late how grossly the Walcott Committee had underestimated the impediments to building the facility. "Owing to the conditions surrounding the present location of the laboratory, which render it entirely unsuited for the

general offices," wrote Lee M. Griffith, Langley's first Engineer-in-Charge, "it is desirable to limit the personnel at the laboratory to that required for the laboratory operations alone."<sup>8</sup>

Not surprisingly, the *facts on the ground* fostered tensions among the civilian N.A.C.A. and its military landlords. The Air Service brass held the N.A.C.A. at least partly responsible for the sluggish pace of construction at Hampton, as well as for the resulting delays in pursuing essential wartime research projects. As a consequence, Army leaders made a fundamental change in plan: they decided to transfer the anticipated aviation development center from Langley to McCook Field in Ohio, and subsequently designated Langley Field for pilot training. No longer pursuing a shared mission with the civilian engineers, local Army authorities grew indifferent to the N.A.C.A.'s plight, and at times even thwarted the progress of events. The difference in attitude manifested itself when the Army failed to respond to repeated requests by the N.A.C.A. to clarify its legal claim to the land staked out for the laboratory. Army officials remained silent because they hoped to retain control not only of the property itself, but to win oversight of the civilian personnel who worked there, and the research that they pursued. The Air Service did not relent until 1919, and then not gracefully. In April it gave the N.A.C.A. cognizance over Plot 16 of Langley Field, constituting the main laboratory campus. Unfortunately, the confines of this tract left no room for living quarters for the N.A.C.A.'s new arrivals. The service not only refused to offer any additional space for this purpose, but declined to share existing military housing. Faced with the continued horrors of construction as well as Army intransigence, some in the N.A.C.A. argued for closing the Hampton facility entirely and starting over on Bolling Field in Washington, D.C. But Congress refused to abandon the costly construction already underway at Langley, and the laboratory opened in June 1920 despite the N.A.C.A.'s increasingly sour relations with its military landlords.<sup>9</sup>

Members of the Main Committee of the N.A.C.A., May 1920. Chaired by Smithsonian Secretary Charles D. Walcott (far right), the meeting also included Joseph S. Ames (second from right) who succeeded Walcott and had a pivotal role in N.A.C.A. affairs for 25 years.



**MITCHELL CALLED OPENLY FOR AN INDEPENDENT AIR SERVICE, EVENTUALLY LAUNCHING A PUBLIC CAMPAIGN THAT DROVE THE N.A.C.A.—AN OVERT TARGET OF HIS WRATH, EVEN BEFORE IT OPENED—INTO THE ARMS OF THE NAVY**

Army ill-will did not end there. It became embodied in the person of General William “Billy” Mitchell, who proved to be a formidable adversary. Mitchell, the son of Wisconsin Senator John L. Mitchell, joined the Army Signal Corps in 1901 and served in Cuba and the Philippines. His interest in aviation blossomed during World War I, when he became Chief of the Signal Corps Aviation Section. Beginning in this period, Mitchell called openly for an independent air service, eventually launching a public campaign that drove the N.A.C.A.—an overt target of his wrath, even before it opened—into the arms of the Navy, another of Mitchell’s *betes noires*. Mitchell believed that the advent of aerial bombardment had changed the face of warfare because neither armies nor navies could counteract it successfully. He argued his case vociferously, denouncing the N.A.C.A., the Navy, and all other aeronautical competitors as ineffective, neglectful, and inferior compared to air services of other countries.<sup>10</sup>

Billy Mitchell’s agitations led to an appearance by George Lewis before Congress in December 1924. Lewis testified with his boss, Joseph S. Ames, Chair of the N.A.C.A.’s Executive Committee (1919 to 1937) and simultaneously its Main Committee (1927 to 1937). An eminent physics professor and future president of Johns Hopkins University, Ames exerted a powerful hold on the N.A.C.A.’s research agenda from its earliest days. Together, Lewis and Ames explained to the House of Representatives Subcommittee on Appropriations why the N.A.C.A. required a budget of \$470,000 for fiscal year 1925, up \$163,000 from the year before. To blunt Mitchell’s criticism of the N.A.C.A., Ames and Lewis decided to concentrate their remarks on the N.A.C.A.’s work for the Army and Navy. They posed a good question: If the N.A.C.A. had little value, as Mitchell claimed, why did the military services enlist its help? Indeed, from 1921 to 1924, the Navy transferred almost \$224,000 to the N.A.C.A., and the Army about \$39,000. In all, the N.A.C.A. received \$263,000 from the military in this period to pursue experimental projects, not a trivial amount

in the context of the total N.A.C.A. appropriation of about \$895,000 during these years.

Before Ames and Lewis disclosed to the committee some of the actual research projects pursued for the armed forces, Charles Walcott—at this time the Chairman of the N.A.C.A. Main Committee, in addition to his Smithsonian duties—offered a rebuttal to Mitchell’s claims.

*When the National Advisory Committee for Aeronautics was established in 1915, it literally had to beg for a place to hold its meetings. Now that it has developed an organization that gets results with the maximum of economy and efficiency and an organization that has challenged the admiration and aroused the curiosity of the aeronautical authorities in other countries, efforts are being made to absorb it in various ways. The absorption of the National Advisory Committee for Aeronautics by any other agency of the Government would destroy the usefulness of the committee. Its success has been made possible by reason of its status as an independent establishment....*

Walcott ended with an endorsement of this position by the President of the United States, Calvin Coolidge.<sup>11</sup>

Ames and Lewis returned to center stage with a detailed discussion of the ways in which the N.A.C.A. served the research needs of the military. They explained to the committee chair, Congressman William Wood that Army officials recently approached the engineers at Langley with the problem of dangerous air loading on the newest pursuit aircraft. Combat pilots flying faster planes equipped with more powerful engines had experienced sudden structural failures in flight, the result of excessive pressure, especially on the wings and tail sections. (See more about pressure distribution research, below). Meanwhile, naval authorities had turned to the N.A.C.A. often for assistance specific to their needs. These projects involved pressure distribution on airships, of immense importance for

The N.A.C.A.'s top three leaders in 1938: Henry Reid (left) Engineer in Charge of the Langley Laboratory; Dr. Vannevar Bush (center) about to succeed Joseph Ames as N.A.C.A. Chairman; and George Lewis, the N.A.C.A.'s Director of Research and its guiding spirit.



**JEROME HUNSAKER ARRIVED ON THE SCENE AT ABOUT THE SAME TIME AND BECAME ONE OF ITS MOST ENTHUSIASTIC AND LOYAL SUPPORTERS, EVENTUALLY BECOMING ITS LEADER DURING THE 1940s AND 1950s**

their survival during bad weather; pressure distribution on aircraft taking off and landing on carriers; the development of supercharging, which added greater power for climb-outs; and research on air-cooled (radial) engines, preferred by the Navy due to their relative light weight. The committee learned further that the funds transferred by the Army and Navy had not only covered labor costs anticipated in connection with N.A.C.A. research, but had also been invested in advanced equipment and materials used in a host of other projects.<sup>12</sup>

During the year after these hearings, Mitchell and his cause made national headlines when the Navy airship *Shenandoah* crashed in a squall over Ohio, killing fourteen crewmembers. Mitchell castigated the Navy and War Department for criminal negligence in the loss. In the face of Mitchell's intemperate remarks, the Army felt compelled to act, bringing court-martial proceedings against him. Even President Coolidge became involved, appointing businessman Dwight Morrow and a board to investigate. During the hearings, a naval officer named Jerome C. Hunsaker, who had close ties to the N.A.C.A., testified before the panel that U.S. aeronautics ranked somewhere in the middle in comparison to other powers, producing aircraft that out-performed the Europeans, but in fewer numbers. The Morrow board found the administration of naval aviation more than satisfactory and rejected Mitchell's combined air arm arguments. The Army court-martialed Mitchell, and he resigned from the service in 1926.<sup>13</sup>

**Friends from the start: the N.A.C.A. and the Navy**

If relations with the Army had been uneven at best, the Navy became a trusted ally from the N.A.C.A.'s infancy. Not only had the service served as the midwife for its initial (1915) appropriation, the N.A.C.A. continued to be funded as part of naval appropriations from 1916 to 1919. Even more decisive to binding the relationship, General Mitchell's drive to unify U.S. aeronautics under an indepen-

dent air service brought the N.A.C.A. and the Navy into close alignment, uniting them against a common adversary. And tellingly, when the N.A.C.A. Executive Committee convened, it met in the Navy Building in Washington, D.C.

This bond became stronger still under the influence of a young naval officer who held positions pivotal to the N.A.C.A., and continued his nurturing role later on in civilian life. Just as General Scriven took the N.A.C.A. in hand during its first year, Jerome Hunsaker arrived on the scene at about the same time and became one of its most enthusiastic and loyal supporters, eventually becoming its leader during the 1940s and 1950s. Hunsaker's allegiance represented more than just an accident of timing—his career blossomed during the N.A.C.A.'s formative years—but rather a respectful partnership based on mutual objectives.

Born in 1886, Hunsaker graduated first in his class from the U.S. Naval Academy in 1908. He began his Navy career as a graduate student at the Massachusetts Institute of Technology (M.I.T.), where he studied naval architecture and subsequently initiated the school's program in aeronautics. Then, in 1916, Hunsaker earned M.I.T.'s first doctorate in aeronautical engineering, and published the essence of his dissertation (on stability research) in the N.A.C.A.'s first Annual Report. When he left M.I.T. he assumed command of the Aviation Division in the Navy's Bureau of Construction and Repair. Because of Hunsaker's position, in 1920 Joseph Ames asked him to travel to Europe and inspect the aeronautical laboratories of the major combatants. Hunsaker accepted, and his observations had a long-term impact on the research agenda of the Langley laboratory. Another positive outcome of the overseas tour: in Germany he met the brilliant young scientist Max Michael Munk, whom he persuaded to emigrate to the U.S. and to join the N.A.C.A. Despite his mercurial temperament, Munk's discoveries gave the N.A.C.A. its first taste of international recognition.

Back in America, the Navy assigned Hunsaker to his dream job. In 1921 he became the Chief of

Jerome Hunsaker insisted that the N.A.C.A. use a Davis-Douglas DT-2 aircraft, like the one shown here, for a Navy-sponsored program to test the value of engine supercharging



**HUNSAKER LEFT THE NAVY FOR A POSITION AT BELL LABS, FOLLOWED IN 1933 BY A RETURN TO M.I.T. WHERE HE ASSUMED THE CHAIRMANSHIP OF THE MECHANICAL ENGINEERING DEPARTMENT**

Design in the Bureau of Aeronautics' Material Division, responsible for the specifications, planning, and procurement of all Navy aircraft and propulsion systems. He served under the chief of the bureau, the powerful Admiral William Moffett, with whom Hunsaker had developed a relationship "of great confidence." Meanwhile, in a decision reflecting Hunsaker's rising stature in N.A.C.A. circles, in 1922 he won a seat on the N.A.C.A.'s Main Committee, replacing Admiral David Taylor. Despite these achievements, at the age of forty (in 1926) Hunsaker left the Navy for a position at Bell Labs, followed in 1933 by a return to M.I.T. where he assumed the chairmanship of the Mechanical Engineering Department. He resigned from the N.A.C.A. Main Committee upon his departure from the Navy, but during the succeeding years retained powerful contacts inside the service as well as in the N.A.C.A. Then, in 1938, he returned to the Main Committee, became its chairman in 1941, and in the same year succeeded Dr. Vannevar Bush as chair of the N.A.C.A. Executive Committee. He presided over both until 1956, further tightening the Navy-N.A.C.A. alliance during his tenure.<sup>14</sup>

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Two early N.A.C.A. research projects—engine supercharging and pressure distribution—illustrate its asymmetrical relationships with the Navy and the Army. Supercharging actually involved both of the services, each one contacting the N.A.C.A. independently for help. It represented one of the earliest major projects pursued at Langley, initiated in June 1920, by Joseph Ames as Research Authorization 35, The Roots Type Positive Driven Supercharger. The N.A.C.A. Executive Committee took an interest in part because George Lewis designed the system, but also because it held great promise for the armed forces. Simply by compressing air at the engine intakes, it enabled aircraft to make fast climbs to full altitude despite the lower air density and pressure

at the higher reaches of the atmosphere.

Despite its sometimes contentious relationship with the N.A.C.A., Army aviation saw much to be gained from supercharging. Accordingly, the Chief of the Air Service's Engineering Division augmented the N.A.C.A.'s initial project budget (just \$4,425) with the loan of a new DeHavilland DH-4B aircraft, equipped with the Liberty engine, to serve as the project's flight test vehicle. Not to be outdone and even more interested due to its potential value for the carrier fleet, Navy authorities pledged to fabricate a propeller specifically for the research and, with the intercession of Admiral Moffett, presented the researchers with four advanced and costly French-made radiators from the Naval Aircraft Factory in Philadelphia. To keep pace with its benefactors, the N.A.C.A. increased its second year supercharger budget to \$17,500.<sup>15</sup>

Then, in early 1923, the Navy Bureau of Aeronautics, in effect, took charge of the project. On February 5th, Langley's Engineer-in-Charge, Leigh Griffith, wrote excitedly to N.A.C.A. headquarters with news that the Bureau had requested an "enlarged" supercharger program. Griffith asked for "immediate action" from Washington to hire more personnel for the project, encouraged by the Navy's offer to pay \$37,500 to cover the salaries of three engineers, two draftsmen, two machinists, as well as test equipment and supplies.

George Lewis told Griffith to relax, explaining that he had already spoken to the sponsor of the enlarged program—none other than Jerome Hunsaker—who "was greatly interested and pleased when I told him that the (Army's) DH-4 aircraft with the Roots type supercharger climbed to 20,000 feet in approximately twenty minutes." In exchange for the Navy's patronage, Hunsaker asked Lewis to begin supercharger flight testing on a Davis-Douglas DT-2 airplane equipped with the standard Liberty engine, in order to make a side-by-side comparison with the Army's DH-4 flights. Hunsaker, it turns out, had more than a passing

The year after his arduous 1924 pressure distribution flights in Ohio, Jimmy Doolittle won the Schneider Trophy in this Curtiss Racer. Here he stands on one of its pontoons while visiting the Langley Laboratory in 1928.



interest in the Davis-Douglas DT-2. Aircraft manufacturer Donald Douglas—one of Hunsaker's students at M.I.T. and a lifelong friend—had designed and fabricated the DT-2 under a Navy contract overseen by Hunsaker. Both he and Douglas considered it a good candidate for the Roots supercharger tests, George Lewis agreed, and with that the N.A.C.A. won a major project, which Lewis described as “really an excellent thing, both from the standpoint of the (N.A.C.A.) and from that of the Navy.”<sup>16</sup>

The 1924 flight test program actually succeeded beyond expectations. The Army's DH-4 and the Navy's DT-2 aircraft, both powered by the Liberty engine, underwent extensive head-to-head flight testing. N.A.C.A. Technical Report 263, released in 1927, confirmed the results: although eight feet longer and about 1,200 pounds heavier than the DH-4, the DT-2 climbed as rapidly at 23,000 feet with supercharging as it did at 13,000 feet without it. “The N.A.C.A. Roots type supercharger for aircraft engines,” concluded the report, “is satisfactory under flight operating conditions and its use enables the realization of greatly improved climbing performance...throughout a considerable range of altitudes.”<sup>17</sup>

Pressure distribution research also involved both services, but the Navy again profited from its special relationship with the N.A.C.A. The concern over air loading emerged during the early 1920s when military pilots discovered with increasing alarm that combat flying, and even rigorous training, might cost them their lives—not due to the enemy, but due to the inadequacies of their own planes. Four Air Service pilots died during the early 1920s and others escaped death narrowly as new aircraft equipped with more powerful engines flew faster and with greater maneuverability. These factors, in turn, caused higher pressure on aircraft structures and a greater risk of structural failure. Indeed, such front line machines as the Fokker PW-7, the Curtiss PW-8, and the Boeing PW-9 had all been involved in such incidents.

To investigate, the Engineering Division of the

Army Air Service assigned a twenty-seven-year-old first lieutenant and put at his disposal a Fokker PW-7 pursuit aircraft. The young, multi-faceted officer—James H. Doolittle—earned a Bachelor's degree from the University of California in 1922, the same year in which he became the first pilot ever to fly across America (from Florida to California) in a single day; received a Master's from M.I.T. in the same year as the PW-7 flights; and earned the Doctorate of Science in Aeronautics in 1925, also from M.I.T., in the same year in which he won the prestigious Schneider air race.

During March 1924, Doolittle tested the PW-7 in a series of hair-raising flights. He and the engineers at McCook Field (located just outside of Dayton, Ohio), equipped the aircraft with an accelerometer (similar to the type designed by the N.A.C.A.) in order to recreate and measure the limits of maneuver in air combat. Doolittle flew barrel rolls, loops, inverted flight, high angle of bank, and tail spins. In the most risky of all, he lowered the nose of the PW-7 towards the ground and gained speed. At over 160 miles per hour, he jerked the control stick, pulled up the elevators, and rose out of the nosedive. This maneuver exerted the maximum dynamic loading. Indeed, Doolittle calculated that had he flown just a little faster—at 185 miles per hour, a speed often reached in aerial warfare—the wings would have failed.<sup>18</sup>

Doolittle's courageous flying in 1924 resulted in a seminal N.A.C.A. report (“Accelerations in Flight”) published the following year, which pinpointed the danger of air pressure on various parts of high performance military aircraft. These findings prompted the Chief of the Army Air Service Major General Mason Patrick to request from the N.A.C.A. a broad review of the problem, including an “extensive program of flight tests to obtain pressure distributions and accelerations for the purpose of determining the proper loading to be used in the design of airplanes.” George Lewis accepted the challenge, and prepared for it by purchasing the N.A.C.A.'s first new aircraft. In doing so, he reversed a ten year practice of using only cast-off military machines for

**DOOLITTLE  
CALCULATED  
THAT HAD HE  
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FARE—THE  
WINGS  
WOULD HAVE  
FAILED**

Parked outside one of the Langley Laboratory hangars, this specially strengthened Boeing PW-9 aircraft underwent exhaustive pressure distribution flight research in the skies over Hampton, Virginia, during the late 1920s.



**THE SUCCESS OF SUPERCHARGING AND PRESSURE DISTRIBUTION RESEARCH REINFORCED THE GROWING PERCEPTION THAT THE N.A.C.A. HAD BECOME AN INSTITUTION OF GLOBAL PROMINENCE IN AERONAUTICAL RESEARCH**

flight research, a frugal habit borne of small budgets. Lewis ordered a sturdy Boeing PW-9 pursuit plane similar to the ones flown by the military services, but specially braced for the rigors of flight testing. Joseph Ames established the project (under Research Authorization 138), with a simple but sweeping statement: “To determine the proper loading to be used in the design of airplanes.”<sup>19</sup>

Just as the personal connection between George Lewis and Jerome Hunsaker re-cast supercharger research, the special Navy relationship also had an influence over the course of the pressure distribution project. In this case, it involved the friendship between Lewis and Lieutenant Commander Walter Diehl, who headed the Bureau of Aeronautics’ liaison office with the N.A.C.A. Diehl knew the N.A.C.A. well. He visited Langley often and became a genial presence there, at the same time learning the details of all of the ongoing research, and on occasion even being privy to embargoed engineering data. Because Diehl and Lewis both maintained offices in the Navy Building in Washington, D.C., they met whenever they liked, and the proximity enabled Diehl to become familiar with the N.A.C.A.’s Washington staff. Lewis liked and trusted Diehl, used him as a sounding board for technical and bureaucratic trouble shooting, and came to rely on him as a “fix-it” man, capable of obtaining equipment, spare parts, loaned aircraft, and even money for high value research from his bosses at the Bureau of Aeronautics. In token of these and other services, Lewis bestowed on Diehl a seat on the N.A.C.A.’s Aerodynamic Stability and Control Committee, which he chaired from 1947 to 1958.

Diehl exploited his leverage with the N.A.C.A. during the pressure distribution project. He asked Lewis to add a flight research program to Research Authorization 138 that interested the Navy keenly, but had almost no relationship to the phenomena of pressure distribution as defined by General Patrick. During the 1920s, instrument makers became aware that intense ambient pressure inside of sealed cockpits sometimes caused erroneous read-

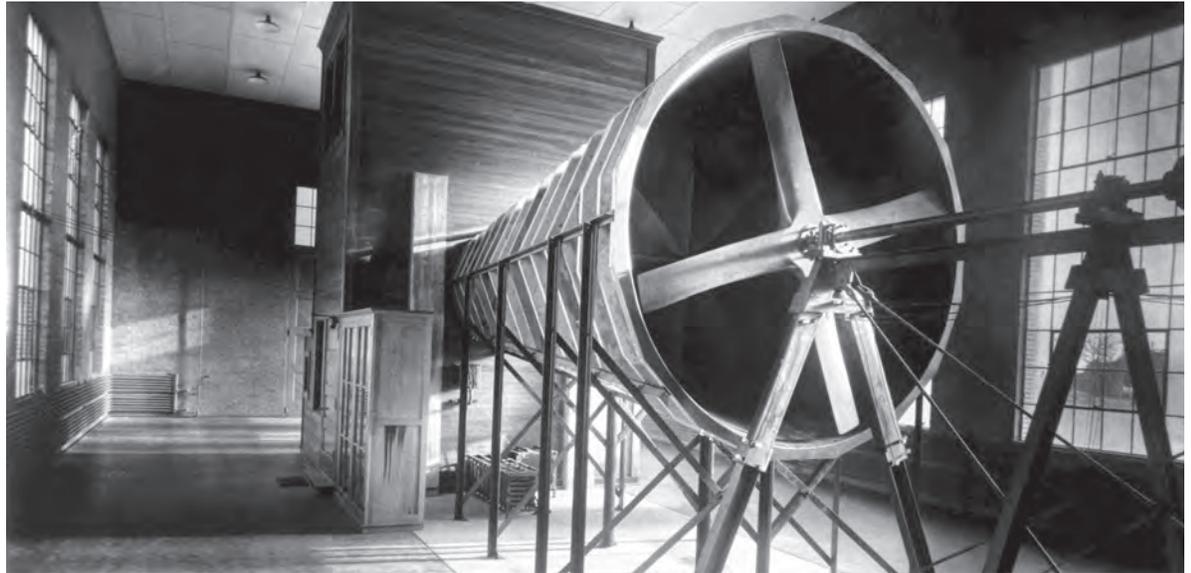
ings on gauges. Rather than relying on temporary fixes like re-setting them, Diehl and the manufacturers wanted the N.A.C.A. to research the aerodynamics of cockpits in order to reduce the interior pressure. Lewis’s ties to Diehl left him little choice; even though the pressure distribution project had already imposed heavy burdens on Langley’s limited resources, he complied with the request. The investigation began almost immediately on a Vought aircraft, with additional follow-on testing of a commercial, closed-cabin aircraft in 1929.

The formal pressure distribution research lasted from 1925 to 1930. As well as extensive wind tunnel testing, it demanded daredevil flying from Langley’s pilots under conditions similar to those undertaken by Doolittle at McCook Field. Overall, the pressure distribution project served the highly useful function of enabling the N.A.C.A. engineers to gain a greater understanding of the relationship between tight maneuvers, air loading, and the effects on combat aircraft. Moreover, in such publications as “A Method for Computing Leading Edge Loads,” the research offered actual formulae for aircraft manufacturers to estimate the specific design loads on aircraft structures. These approximations gave confidence to the industry that the military aircraft they fabricated could withstand the stresses of combat.

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The success of supercharging and pressure distribution research reinforced the growing perception that the N.A.C.A. had become an institution of global prominence in aeronautical research, a reputation gained in large part through its increasing work for the armed forces. Its engineers and scientists had undertaken many and varied military projects. But by and large, the proliferation of wind tunnels (about thirty had been built at Langley up to the 1950s) reflected the N.A.C.A.’s true institutional identity: it concentrated on aerodynamics. The military services came to rely on this unique specialty. Between 1920 and 1939, the Army and Navy con-

Pictured here is the N.A.C.A.'s first wind tunnel, completed in 1920. This one and the many that followed enabled the N.A.C.A. to achieve eminence in aerodynamics research, which it pursued extensively for the American armed forces.



**AS WORLD WAR II PROGRESSED, THE SHEER VOLUME OF ACTIVITY BROUGHT THE N.A.C.A. AND ITS MILITARY PATRONS INTO CLOSER CONTACT THAN EVER BEFORE**

stituted almost half of the 476 research authorizations pursued at Langley. Of the 232 military requests, however, the Navy dominated the workload. By 1939, it had become not just the N.A.C.A.'s ally, but its mainstay, making 159 formal research requests in the previous nineteen years, compared to only seventy-three for the Army. However, during the months leading up to American entry into World War II, the trend finally reversed; during 1940 and 1941 the Army asked for help eighty-three times, the Navy fifty-nine.

During the war itself, Langley's workload mushroomed as its staff struggled to meet the demands of the armed forces, even as the N.A.C.A. opened two new facilities—the Ames Aeronautical Laboratory in Northern California, and the Aircraft Engine Research Laboratory in Cleveland, Ohio. Mainly, but certainly not entirely, aerodynamic drag cleanup occupied the time of the Langley researchers as requests flooded in from the Army, Navy, and industry. This program continued an N.A.C.A. tradition pursued for a generation. Much like earlier cowling and airfoil work, drag cleanup involved wind tunnel and flight testing of prototype and production military aircraft to improve aerodynamic flow and thus increase the range and speed of bombers, pursuit, and transport aircraft. Perhaps

not the favorite work of engineers who hoped to open new vistas, drag cleanup nonetheless contributed greatly to the U.S. war effort in the air.

As World War II progressed, the sheer volume of activity brought the N.A.C.A. and its military patrons into closer contact than ever before. This proximity did not erase the old tensions between the N.A.C.A. and the Army, but for now the war overshadowed them. Still, despite the truce, the ill-will continued to rankle, perpetuated in part by the N.A.C.A.'s recent expansion and by its recognized preeminence, and in part by a feeling in Army air circles that Billy Mitchell had been right—that an independent air arm required an independent research establishment, free of external control. These sentiments, as well as the historic bond between the N.A.C.A. and the Navy, resurfaced after the war, if anything with even greater strength than before.<sup>20</sup> ■

*I would like to acknowledge the help of Dr. Von Hardesty, Senior Curator at the National Air and Space Museum, Washington, D.C., and Mr. Karl Bender, Research Librarian at the NASA Dryden Flight Research Center, Edwards, California, in the preparation of this article.*

This photograph of some of the Langley Laboratory's youthful engineering staff taken in summer 1930 suggests the informality of the workplace and the workforce.



1. The term "Golden Age of Aviation" is borrowed from the title of Professor William M. Leary's influential book, *Aviation's Golden Age: Portraits from the 1920s to 1930s* (University of Iowa Press, 1989), James R. Hansen, *Engineer in Charge: A History of the Langley Aeronautical Laboratory, 1917-1958* (Washington, D.C.: NASA, 1987), pp 1-5; Alex Roland, *Model Research: The National Advisory Committee for Aeronautics, 1915-1958*, vol. 2, Appendix A: *An Act Making appropriations for the naval service for the fiscal year ending June thirtieth, nineteen hundred and sixteen, and for other purposes* (Washington, D.C.: NASA, 1985), pp. 394-95 (quoted passage, on p. 394).
2. Alex Roland, *Model Research: The National Advisory Committee for Aeronautics, 1915-1958*, vol. 1 (Washington, D.C.: NASA, 1985), p. 27; Roland, *Model Research*, vol. 2, p. 394.
3. On August 1, 1907, the U.S. Army Signal Corps established an Aeronautical Division. The flying wing of the U.S. Army became known, successively, as the Aviation Section of the U.S. Army Signal Corps in July 1914; the Army Air Service in May 1918; the Army Air Corps in July 1926; and the Army Air Forces in June 1941. Advocates for a separate air service achieved their goal with the creation of the U.S. Air Force on September 18, 1947. Flint O. DuPre, *U.S. Air Force Biographical Dictionary*, "George Percival Scriven," (New York: Franklin Watts, 1965), p. 210; Roland, *Model Research*, vol. 2, Appendix H: *Brig. Gen. George P. Scriven to Advisory Committee for Aeronautics, 16 April 1915*, 597-601 (first quoted passage on p. 601); Roland, *Model Research*, vol. 2., Appendix A: *Rules and Regulations for the Conduct of the Work of the National Advisory Committee for Aeronautics, Washington D.C., April 23, 1915*, pp. 403-408; James R. Hansen, with D. Bryan Taylor, Jeremy Kinney, and J. Lawrence Lee, eds., *The Wind and Beyond: A Documentary Journey into the History of Aerodynamics in America*, vol. 1: *The Ascent of the Airplane*, Document 2-3(b), *George P. Scriven, Chairman's Letter for the first NACA Annual Report, 1915* (Washington, D.C.: NASA, 2003), pp. 307-309 (second quoted passage on p. 308).
4. Hansen, *Engineer in Charge*, pp. 10-11; Michael H. Gorn, *Expanding the Envelope: Flight Research at NACA and NASA*, (Lexington, Kentucky: The University Press of Kentucky, 2001), p. 41.
5. Michael H. Gorn, *NASA: The Complete Illustrated History* (London and New York: Merrell Publishers, 2008), 18; Roland, *Model Research*, vol. 1, p. 141 (quoted passage).
6. "Virginia's Agricultural Resources" in Chapter 1: *Virginia Naturally—Natural Resource Education Guide* (Richmond, Virginia: Virginia Department of Environmental Quality), available from [www.vanaturally.com/guide/agriculture.html](http://www.vanaturally.com/guide/agriculture.html); Internet, accessed May 25, 2010); James Schultz, *Winds of Change: Expanding the Frontiers of Flight—Langley Research Center's 75 Years of Accomplishment, 1917-1992* (Washington, D.C.: NASA, 1992), p. 9; Roland, *Model Research*, vol. 2, Appendix H: *Report of the Subcommittee on a Site for Experimental Work and Proving Grounds for Aeronautics, 23 Nov. 1916: excerpt from minutes of Executive Committee meeting, 23 Nov. 1916*, p. 603 (quoted passage).
7. Thomas Wolfe, *Look Homeward, Angel: The Story of a Buried Life* (New York: Charles Scribner's Sons, 1929), pp. 428-430 (quoted passages on p. 430).
8. Hansen, *Engineer in Charge*, p. 18 (first quoted passage); Roland, *Model Research*, vol. 2: Appendix H: *Lee M. Griffith to Executive Committee, 4 April 1918*, pp. 609, 617 (second quoted passage on p. 617).
9. Hansen, *Engineer in Charge*, pp. 19-21; Roland, *Model Research*, vol. 1, pp. 81-84.
10. William P. Trimble, *Jerome C. Hunsaker and the Rise of American Aeronautics* (Washington and London: Smithsonian Institution Press, 2002), pp. 94-97; William P. Trimble, *Admiral William P. Moffett: Architect of Naval Aviation* (Washington and London: Smithsonian Institution Press, 1994), pp. 8-10; Dupree, *Air Force Biographical Dictionary*, "Major General William Mitchell," pp. 169-71.
11. Roland, *Model Research*, vol. 2: Appendix C: *Inter-agency Transfer of Funds*, p. 478, *NACA Expenditures, by Fiscal Year*, p. 479; Congress, House, Subcommittee of House Committee on Appropriations, Independent Offices Appropriations Bill for 1926, *National Advisory Committee for Aeronautics: Hearing before the Subcommittee of House Committee on Appropriations*, 68th Cong., 2d sess., Dec. 29, 1924, pp. 378-79 (quoted passage on p. 378); Gorn, *NASA: The Complete Illustrated History*, pp. 17-18.
12. Congress, House, *National Advisory Committee for Aeronautics: Hearing before the Subcommittee of House Committee on Appropriations*, 68th Cong., 2d sess., Dec. 29, 1924, pp. 379-81, 385-87.
13. Trimble, *Hunsaker*, pp. 94-96.
14. Roland, *Model Research*, vol. 2: Appendix C: *NACA Appropriations, by Year*, 469; Roland, *Model Research*, vol. 1, pp. 66-67; Hansen, *Engineer in Charge*, pp. 143-44; Trimble, Hunsaker, pp. 13, 34-35, 37, 70-72, 76-77, 88, 136-37, 162, 167, 180; Trimble, *Moffett*, 10 (quoted passage).
15. N.A.C.A., *Research Authorization p. 35: Root Type Positive Driven Supercharger* (June 1920) signed by S.W. Stratton and Joseph Ames; George W. Lewis to Langley Memorial Aeronautical Laboratory, 1 August 1921; Major Thurman H. Bane to N.A.C.A. Headquarters, Sept. 12, 1921; N.A.C.A. *Research Authorization p. 35: Roots Type Supercharger* (November 1921) signed by S.W. Stratton and Joseph Ames; Rear Admiral William Moffett to National Advisory Committee for Aeronautics, Jan. 23, 1923. Documents cited in this note are located in the NASA Langley Research Center Archives.
16. Leigh Griffith to N.A.C.A., Feb. 5, 1923, with attachment: "Supercharger Development Enlarged Program to Cover U.S. Navy Request," Langley Field, Virginia, 3 February 1923 (first quoted passages); George Lewis to Langley Memorial Aeronautical Laboratory, 17 February 1923 (second quoted passage); Gorn, *Expanding the Envelope*, 51. Documents cited in this note (except for the last one) are located in the NASA Langley Research Center Archives.
17. Marsden Ware and Arthur Gardiner, "Supercharging the Lawrence J-1 Air Cooled Engine," Langley Field, Virginia, Nov. 15, 1923; Marsden Ware and Arthur Gardiner, "Preliminary Report on Supercharging the Lawrence J-1 Engine (Air-Cooled)," Langley Field, Virginia, Aug. 30, 1924; Arthur Gardiner and Elliott Reid, "Preliminary Flight Tests of the N.A.C.A. Roots Type Aircraft Engine Supercharger," N.A.C.A. Technical Report 263 (Washington, D.C.: U.S. Government Printing Office, 1928), pp. 214, 217 (quoted passage on p. 217). Documents cited in this note (except for the last one) are located in the NASA Langley Research Center Archives.
18. Michael H. Gorn, *Expanding the Envelope*, pp. 55-58; J.H. Doolittle, "Accelerations in Flight," (Washington, D.C.: NACA Technical Report 203, 1925), pp. 373-374, 385, 387-88; James F. Aldridge and others, *Against the Wind: 90 Years of Flight Test in the Miami Valley* (Dayton, Ohio: Aeronautical Systems Center, 1994), pp. 10-11, 13.
19. The narrative presented in the section on pressure distribution research is adapted from Gorn, *Expanding the Envelope*, 52-88. See pages 58 and 61 for the quoted passages.
20. For the Diehl-Lewis relationship, see Roland, *Model Research*, vol. 2: Appendix B: *Committees*, p. 454, and Appendix F: *Research Authorization 201*, p. 538; Gorn, *Expanding the Envelope*, pp. 71-72; and Hansen, *Engineer in Charge*, p. 165. For insight into the N.A.C.A.-Navy-Army relationship in the interwar and war periods, see Hansen, *Engineer in Charge*, pp. 161, 179-80, 192-02. The wind tunnel tally is derived from Hansen as well, pp. 441-78.

# ARNOLD AT POTSDAM





Herman S. Wolk

(Overleaf) U.S. President Harry S Truman is flanked by British Prime Minister Winston Churchill (left) and Soviet leader Josef Stalin.

THE ALLIES PROMULGATED THE POTSDAM PROCLAMATION, CALLING FOR JAPAN TO SURRENDER OR FACE UTTER DESTRUCTION

PRESIDENT TRUMAN RECEIVED WORD OF THE SUCCESSFUL TEST OF THE ATOMIC BOMB IN THE NEW MEXICO DESERT

The now-famous Potsdam Conference in July 1945, featuring the allied leaders, Truman, Churchill, and Stalin, was the last high level conference of World War II. The Allies promulgated the Potsdam Proclamation, calling for Japan to surrender or face utter destruction. Also present at the Potsdam Conference were the U.S. and British Combined Chiefs of Staff (CCS), including the Commanding General of the Army Air Forces, General Henry H. (Hap) Arnold. For Arnold, weary from four years of exhausting strategic decision-making and global travel, it was nonetheless the apex of his efforts and leadership. He had recently returned from the Pacific, where Maj. Gen. Curtis E. LeMay had informed him that Japan could be forced to capitulate by the end of October due to the culmination of intensive strategic bombing and the sea and air blockades. LeMay's view gave Arnold a surge of optimism as had the results of incendiary bombing over the last several months. These indicators went a long way toward ameliorating Arnold's caution, a holdover from the European experience with strategic bombing.

Importantly, while Arnold received LeMay's briefing in the Pacific, President Truman, on June 18, 1945, directed that the Joint Chiefs of Staff (JCS) plan for a two-stage invasion of Japan, beginning with the assault on Kyushu (OLYMPIC), November 1, 1945. The planning for the massive Kyushu operation, however, had been impacted by intelligence reports in July and early August that the Japanese had greatly reinforced their forces on Kyushu. The JCS in July had in fact directed Pacific commanders to consider alternatives to the OLYMPIC operation.<sup>1</sup>

These circumstances presented challenges to Arnold and the CCS as they convened at Potsdam. Then, on July 16th, President Truman received word of the successful test of the atomic bomb in the New Mexico desert. As a result, Arnold immediately became involved in discussions with Secretary of War Henry L. Stimson and Army Chief of Staff, General George C. Marshall on the details of employing the atomic bomb.

Arnold's trip to the Pacific, featuring briefings by LeMay and his bomb group commanders—indicating that the Japanese could not hold out past October 1945—formed the backdrop for the air chief's state of mind at the TERMINAL conference

at Potsdam. Only two weeks separated Arnold's return from the Pacific and the conference in July 1945 at Potsdam. Truman, sworn as President on April 12, 1945, had for several years in the Senate been chairman of the Special Committee to Investigate the National Defense Program. He had not been privy to the Manhattan Project to develop the atomic bomb. Roosevelt had given Stimson overall supervision of the project while Maj. Gen. Leslie R. Groves managed the Manhattan Project. On April 25th, Stimson briefed Truman on a "highly secret matter," informing him that "within four months we shall in all probability have completed the most terrible weapon ever known in human history, one bomb of which could destroy a whole city."<sup>2</sup>

Even though Germany had capitulated in May, the Joint Chiefs of Staff remained concerned about war weariness in the American public. The battle of Okinawa had taken a terrible toll and Adm. King noted that pressure on the home front might "force a negotiated peace, before the Japs are really licked." Marshall also worried, thinking about "a general letdown" after V-E Day, among both citizens and the military.

Arnold had been informed of the Manhattan Project in the summer of 1943. Groves gave him a detailed briefing on atomic bomb development in the spring of 1944 including an estimate of when the atomic bomb might be ready for use. Groves however, was unsure about the B-29 as the bomb carrier. He suggested to Arnold that the British Lancaster bomber might be employed. Arnold reacted unhappily, assuring Groves that he would have a B-29 ready to accomplish the mission. Arnold and Groves then agreed on three major tasks for the AAF: Providing modified B-29s to carry the bomb; organizing and training the tactical unit to accomplish the mission; and delivering the bomb on target. Also, Groves needed Arnold's help in testing the bomb's ballistics and for transporting equipment and material.<sup>3</sup>

Groves got together with Arnold and planned how to resolve the targeting issue. Ultimately, a special targeting committee was set up with inputs from the Military Policy Committee, scientists at Los Alamos, and operations analysts from Arnold's headquarters. Groves recounted that among the guidelines in target selection were the following: places chosen should greatly affect the ability of the

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Secretary of War Henry Stimson and Secretary of State James F. Byrnes at Potsdam.

Japanese people to continue the war; targets should have military significance; and targets should not have been attacked previously, thus enabling an

accurate assessment of the bomb's effectiveness.<sup>4</sup>

The target committee initially selected Kokura, Hiroshima, Kyoto, and Niigata. The inclusion of Kyoto, a large city and a military target, was rejected by Secretary of War Stimson on the grounds that it had been the ancient capital of Japan with great religious significance to the Japanese people. Arnold and Groves had favored Kyoto on the target list, but Stimson remained adamant. When Groves informed Stimson that he would prefer checking with General Marshall, Stimson replied: "This is a question I am settling myself. Marshall is not making that decision."<sup>5</sup> Subsequently, Nagasaki was added to the list. In retrospect, Groves applauded Stimson's decision, noting that he was happy to have been overruled, and "through Mr. Stimson's wisdom, the number of Japanese casualties had been greatly reduced."<sup>6</sup> Stimson was FDR's contact for development of the atomic bomb. The military, as we have seen, went forward with the planning for OLYMPIC without knowledge of the bomb. In a postwar retrospective, General Marshall noted that, in the event of an invasion of Kyushu, he had planned to employ up to six atomic bombs against the Japanese prior to the invasion. The Interim Committee chaired by

Maj. Gen. Leslie Groves and his deputy and executive officer Brig. Gen Farrell, in 1945.



**THE TARGET COMMITTEE INITIALLY SELECTED KOKURA, HIROSHIMA, KYOTO, AND NIIGATA**

Gen. Henry H. "Hap" Arnold.



**ARNOLD HAD CLEARLY MADE UP HIS MIND TO OPERATE ON TWO TRACKS; OFFICIALLY BACKING THE WAR DEPARTMENT ...WHILE AT THE SAME TIME DRIVING LEMAY TO INTENSIFY HIS URBAN AREA ATTACKS**

Stimson opposed a prior demonstration of the bomb, fearing it might not work.

Modifications of B-29s, with a goal of fifteen aircraft, got underway early in 1944. During the summer, organization of a special combat unit began; the 393rd Bombardment Squadron formed the basis for the 509th Composite Wing, Arnold selecting Col. Paul W. Tibbets, Jr. to command the new unit. Tibbets had flown heavy as well as medium bombers, heavies in North Africa and Europe, and also had experience as a test pilot with the B-29. General LeMay, commanding the XXI Bomber Command in the Marianas, in March 1945, learned about the atomic bomb and the building of a special unit to deliver it. By July, the 509th Group was in place on Tinian island in the Marianas.<sup>7</sup> The successful test of the new bomb on July 16th in the New Mexico desert opened the way for President Truman at Potsdam to confer with Stimson, Marshall, and Arnold regarding the timing and targeting of the weapon.

Arnold has been criticized for failing to present a specific plan or target date to the JCS and the President for Japan's defeat. However, Arnold had nothing to gain by such a formal prediction. Moreover, he wanted to support General Marshall—who promoted the invasion strategy—even while the AAF prosecuted and intensified the strategic bombing campaign. Arnold's relationship with the Army's chief of staff was most important to him. The AAF owed a great deal to Marshall. In the late 1930s, he had supported the buildup of the air forces. After the United States entered the war, Marshall rammed through the crucial 1942 War Department reorganization which made the AAF coequal with the ground forces and the service forces. Thus, in early 1942 the airmen had gained autonomy, providing them the authority and flexi-

bility to employ global air power. This is something that Arnold never forgot and it fueled his discretion in dealing with Marshall.

Consequently, the over-arching reality remained that Arnold would not oppose the great man who had seated him at the allied high policy table; had given him almost unlimited resources; allowed him to run the air forces as he saw fit; and now was giving him the green light to pound Japan, albeit—as Marshall saw it—as a prelude to a massive invasion. Also, of course, Arnold as commander of the Twentieth Air Force reported directly to the Joint Chiefs while prosecuting the B-29 campaign against Japan. There is no question that Arnold and Marshall enjoyed a uniquely complementary relationship during the war. Marshall summed it up by emphasizing that Arnold “was always loyal.”<sup>8</sup> Marshall, spare in countenance, and in communicating, contrasted with his subordinate, the impetuous airman. To Arnold, the most important facet of their relationship was Marshall's steadfast support of Army air power. Although not always in agreement with Arnold, the Army's chief of staff generally supported him in the critical issues of aircraft production and allocation and the strategic bombing campaigns in Europe and the Pacific. Marshall however, never deviated in his view that ground invasions were absolutely necessary to force Germany and Japan to surrender.

However, in June Arnold had clearly made up his mind to operate on two tracks; officially backing the War Department on OLYMPIC and CORONET—an invasion as the best next step—while at the same time driving LeMay to intensify his urban area attacks which he thought might well force Japan to capitulate prior to November 1945. Also, Arnold wasted no time in making use of the interim USSBS report, forwarding a memorandum to the Joint Chiefs in late June, prior to his leaving in July to the Berlin conference at Potsdam. To the Joint Chiefs, Arnold pointed to the report's conclusion that by late 1944 the strategic air offensive had paralyzed the German war economy. Consequently, the report recommended “the fullest possible employment” of strategic air attack against Japan in order to contribute to the enemy's capitulation with a minimum loss of American lives.<sup>9</sup>

There is no doubt that in the summer of 1945, prior to the Potsdam conference, a confluence of governmental and military entities had come to the conclusion that there existed a real probability that Japan could be knocked out without recourse to an allied invasion. These groups included the Joint Staff Planners, the Combined Intelligence Committee, and the U.S. Strategic Bombing Survey (in its preliminary report). Also, Admirals King and Leahy believed that the blockade and bombing could force a surrender. Here, Arnold again in the summer of 1945 struggled with the dilemma of supporting an invasion while in his own mind thinking that bombardment and blockade could force Japan out:

*I consider that our concept of operations against*

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*Japan should be to place initially complete emphasis on a strategic air offensive complemented by a naval and air blockade. While the presently planned scale of air bombardment is expected to create conditions favorable to an invasion of the Japanese homeland on 1 November, it is believed that an acceleration and augmentation of the strategic air program culminated in a land campaign will bring about the defeat of Japan with the minimum loss in American lives.<sup>10</sup>*

Thus, Arnold backed Marshall in the sense that bombardment and invasion were not considered mutually exclusive. Arnold noted a report of the Joint Target Group that indicated that the military and economic capacity of Japan could be destroyed by dropping 1,620,000 tons of bombs on Japan. It was thought that this amount of tonnage could disrupt industry, paralyze transportation, and seriously affect production and distribution of food. This kind of result from the bombing campaign “might cause the capitulation of the enemy and in any event will assure the success of the land campaign in Japan and reduce the loss in American lives to a minimum.” Arnold thus proposed that the bombing campaign, along with the naval and air blockade, might well force a surrender by Japan. If this should prove not be the case, it would nonetheless pave the way for a ground assault. The Joint Target Group called for tightening the air-sea blockade and “that at a reasonably early date” all communication with the mainland and all coastal shipping would be interdicted. The Joint Target Group had concluded that: “The completion of the suggested program will prevent recuperation of Japan as a nation for many years and will leave the Home Islands unable to support their pre-war population until and unless a complete new industrial system can be rebuilt.

Whether a formal capitulation is ever obtained by these means still remains within the choice of the Japanese government.”<sup>11</sup> To those who posit that Arnold failed on June 18th, and again at the Potsdam conference, to lay out a plan as to how and when Japan could be forced to capitulate, he was not about to tie himself and the AAF to “how and when.”<sup>12</sup> He certainly had a general strategic plan, and following LeMay’s briefing on Guam, a target date for Japan’s denouement. He had absolutely nothing to gain by attempting to formally present a plan to the JCS with a specific date for Japan’s capitulation.

Thus, when it came to the question of whether or not an invasion was necessary, the Navy and Army Air Forces were in agreement. King, Leahy and Arnold believed that blockade and bombardment could force Japan to capitulate without an invasion. They did not however, openly argue this case to President Truman on June 18, 1945, but rather acquiesced in the planning for OLYMPIC on the basis of gaining more naval and air bases to prosecute the blockade and bombing. If ultimately an invasion proved to be required, the continued blockade and bombardment would lessen the anticipated casualties. Marshall and MacArthur put forth the argument that there remained no certainty that bombardment and blockade could end the war within the foreseeable future and that consequently an invasion would be necessary.

In July, the Joint Chiefs reiterated their overall objective of forcing the unconditional surrender of Japan by sea and air blockades and intensive air bombardment leading up to an invasion. The assault on southern Kyushu would be a prelude to “the decisive invasion of the industrial heart of Japan through the Tokyo Plain.” Air and naval bases were being developed on Okinawa with the expectation that by November 1st some 2,700 land-based aircraft would be operating from this area. Thus, by November the Japanese situation was expected to be “critical.” Home fleet units “have already been so reduced as to no longer constitute a controlling strategic factor. Their air arm is already committing training planes to combat and will probably continue to devote much of their remaining air power to suicide tactics.”<sup>13</sup>

Following the Kyushu invasion, the assault on the Tokyo Plain was planned for March 1, 1946; however, the Joint Chiefs hedged their bet by noting that, prior to this date, the bombardment and blockade would be intensified and in the event the invasion was not considered “feasible and acceptable,” an even greater extension of bombardment and blockade would be considered. It also remained possible that a Japanese capitulation could evolve following the assault on southern Kyushu. The question of potential casualties was ever-present. “Our casualty experience in the Pacific war,” the Chiefs noted, “has been so diverse as to throw serious doubt on the validity of any quantitative estimate” of casualties in the future. Recent campaigns resulted in the following U.S. casualties, killed, wounded, and missing: Leyte, 17,000; Luzon,

THE TWO MAJOR ISSUES DISCUSSED AT POTSDAM WERE THE EMPLOYMENT OF THE ATOMIC BOMB AND ENTRY OF THE SOVIET UNION INTO THE WAR AGAINST JAPAN

31,000; Iwo Jima, 20,000; and Okinawa, 46,700.<sup>14</sup>

Also the Combined Intelligence Committee issued its estimate of the campaign against Japan. The Japanese Navy had been reduced to a shell, its Air Force concentrating on suicide missions. The Japanese Army, consisting of about four and a half million men, retained little mobility and was constricted by supply shortages. Nonetheless, there remained little chance of a surrender until the Army acknowledged defeat in the field. The Japanese military concentrated on defense of the home islands, specifically Kyushu and Honshu, with a total force of over two million men. They also aimed to build up their forces in Manchuria, Korea, and north China against a potential move by the Soviet Union. This force could total approximately a million and a half men. The committee thought the Japanese unlikely to employ a strong air effort to defend Manchuria at the expense of defense of the home islands.

In July 1945, according to U.S. intelligence, the Japanese were making desperate efforts to avoid utter defeat or unconditional surrender. Foremost was the attempt to convince her enemies that an assault on the home islands would prove enormously costly in casualties and time. Concomitantly, according to intelligence sources, Japan continued to make every effort to persuade the Soviet Union to remain neutral. Should the situation deteriorate even further during the summer, Japan might even make an attempt to engage the Soviets as a mediator in order to end the conflict. The ruling Japanese government aimed to fight as long as possible to avoid a shattering defeat and to gain a better position in any negotiated peace.

According to the Intelligence Committee, the sea blockade and strategic bombing had a devastating effect on civilian morale. The bombing had made millions homeless and destroyed large urban areas of Japan's most important cities. The potential entry of the Soviet Union into the war might convince the Japanese "of the inevitability of complete defeat." Although the Japanese people historically believed in sacrifice for the nation, "they would probably prefer national survival, even through surrender, to virtual extinction."<sup>15</sup>

Nonetheless, prior to Potsdam, there were no indications that the Japanese were prepared to accept unconditional surrender. Key issues remained in the person of the emperor and the position of the Army:

*The Army leaders must, with a sufficient degree of unanimity acknowledge defeat before Japan can be induced to surrender. This might be brought about either by the defeat of the main Japanese armies in the Inner Zone or through a desire on the part of the army leaders to salvage something from the wreck with a view to maintaining military tradition.*<sup>16</sup>

The successful test of the atomic bomb on July 16th in the New Mexico desert opened the way for President Truman at Potsdam to confer with Stimson, Marshall and Arnold regarding the timing

and targeting of the revolutionary weapon. The two major issues discussed at Potsdam were the employment of the atomic bomb and entry of the Soviet Union into the war against Japan. As for Arnold, the news about the atomic bomb presented a difficult challenge. The success of the conventional incendiary B-29 campaign had Japan on the ropes, opening up the probability that the Japanese might surrender without the necessity of a costly invasion. Thus, Arnold weighed the impact of his view that—although he was not opposed to dropping the bomb—it was not militarily necessary. At Potsdam, on 16 July, the first meeting of the Combined Chiefs described the situation for Japan as basically hopeless. The enemy could not counter allied sea and air offensives, its capabilities reduced to suicide operations. The Combined Chiefs made the point that the incendiary bombing attack on Japan's cities was having "profound" psychological and economic effects. War production centers had been shattered, resulting also in a loss of communications and control. A subsequent all-out campaign against transportation could result in a cataclysmic collapse within the Japanese nation. The Combined Chiefs, however, figured that there was little prospect of surrender until the Japanese military acknowledged defeat.

The Potsdam conference, July 17th to August 2nd, saw Truman and Churchill approve the Combined Chiefs of Staff report on July 24th for the conduct of the war against Japan.

*In cooperation with other Allies to bring about at the earliest possible date the defeat of Japan by: lowering Japanese ability and will to resist by establishing sea and air blockades, conducting intensive air bombardment, and destroying Japanese air and naval strength; invading and seizing objectives in the Japanese home islands as the main effort....*

Further, the plan for the defeat of Japan (DOWNFALL), with the overall objective of unconditional surrender, aimed at invasions of Kyushu and Honshu as well as intensifying the blockade and air bombardment. The Combined Chiefs emphasized that defeat of the enemy in the home islands was a "prerequisite" to unconditional surrender. The Combined Chiefs also noted that Soviet entry into the war against Japan should be encouraged, and they further recommended that for planning purposes the date for the end of "organized resistance" by Japan be November 15, 1946, and that this date should be adjusted periodically as circumstances dictated.<sup>17</sup>

The insistence of Roosevelt, Truman and the allies upon unconditional surrender has been criticized as unnecessarily rigid, an impetus to prolonging the Japanese surrender. The unconditional surrender policy, initially announced at Casablanca in January 1943, had been strongly enunciated by Roosevelt and Churchill. It presented a difficult counterweight to the Japanese, who early on figured that the Americans would somehow accept a negotiated settlement of the conflict. Eric Larrabee, in



Brig. Gen. Lauris Norstad, Gen. Henry H. "Hap" Arnold and General George C. Marshall at Potsdam.

his brilliant work on Roosevelt as commander-in-chief, has described the deeply felt character of the unconditional surrender policy:

*This was the route to which the President gave his powerful assent. The choice of it led a long way, longer perhaps than any other choice the Allies made. Their political objectives were implicit in the way they chose to fight, and could not be readjusted retroactively as the fighting drew to a close. That is, the total defeat of their enemies came first, and determined the strategies employed to that end.<sup>18</sup>*

Unconditional surrender was the correct and indeed the inevitable policy given the deep, implacable feelings aroused by the total war unleashed by Imperial Japan. In early May 1945, when announcing the end of the war in Europe, President Truman made forcefully clear his agreement with the unconditional surrender policy:

*...The Japanese people have felt the weight of our land, air, and naval attacks. So long as their leaders and the armed forces continue the war the striking power and intensity of our blows will steadily increase and will bring utter destruction to Japan's industrial war production, to its shipping, and to everything that supports its military activity.*

*The longer the war lasts, the greater will be suffering and hardships which the people of Japan will undergo—all in vain. Our blows will not cease until the Japanese military and naval forces lay down their arms in unconditional surrender.<sup>19</sup>*

Truman, in his memoir, insisted that at Potsdam the military had agreed with employment of the atomic bomb against Japan. He also noted that the Joint Chiefs of Staff, including Adm. King and Gen. Arnold, agreed with the plan for a two-stage invasion of Japan.<sup>20</sup> Arnold, however, stated his position at Potsdam that—although not opposed to using the atomic bomb—employment of the bomb was not necessary to defeat Japan.<sup>21</sup> Margaret Truman, in her book on her father, states that Arnold, alone of the Joint Chiefs, thought that Japan could be bombed into capitulation by the conventional B-29 campaign.<sup>22</sup> The official U.S. Army

history emphasized that Arnold at Potsdam read into the record a statement “representing the most optimistic point of view” as to when the Japanese might be forced to surrender, namely by the end of October 1945. According to Arnold,

*In the employment of these forces in the Ryukyus supplementing the present forces in the Marianas, we expect to achieve the disruption of the Japanese military, industrial and economic systems... We estimate that this can be done with our forces available in the month prior to the invasion of Japan. Japan, in fact, will become a nation without cities, with her transportation disrupted and will have tremendous difficulty in holding her people together for continued resistance to our terms of unconditional surrender.<sup>23</sup>*

Moreover, as we have seen, Arnold was not present at the June 18, 1945 meeting at the White House, but was in the Marianas where he had met with LeMay. Apparently at General Marshall's direction, Gen. Ira Eaker sat in for Arnold at the meeting with Truman and the Joint Chiefs. Although Eaker stated his agreement—based, he said, on a cable he had received from Arnold—with the need to invade the home islands, Arnold had in his own mind decided that it would not be required, based on the briefing he had received from LeMay on Guam. For his part, Truman was well aware of the impact that blockade and bombardment were having on the Japanese home islands.

Secretary of War Stimson had drafted a declaration on July 2nd along the lines that Ambassador Joseph Grew proposed. The final version of the Potsdam Declaration, however, promulgated on July 26th, made no reference to the future status of the Emperor, as recommended by Stimson. In Stimson's memorandum to President Truman outlining his “Proposed Program for Japan,” which became the basis for the Potsdam Declaration of July 26th, he noted that plans were authorized and proceeding for the assault on Kyushu. Stimson was gravely concerned that the invasion would provoke “fanatical resistance” by the Japanese, similar to what the Americans faced on Okinawa and Iwo Jima. He noted his familiarity with the terrain, which impressed him as being conducive to “a last ditch defense.”<sup>24</sup>

An invasion, Stimson noted, would be an “even more bitter finish fight than in Germany.” He suggested as an alternative that the Japanese be given a warning, providing an opportunity to capitulate. According to Stimson, such a warning calling on Japan to surrender would be issued in plenty of time for a national reaction to occur. Stimson pointed to a number of favorable factors that the allies had in play as opposed to the situation against Germany. These included the tight blockade and the impact of the powerful strategic bombing campaign against the home islands to which Japan was exceedingly vulnerable.<sup>25</sup>

Stimson was convinced that the timing was appropriate, that Japan was now susceptible to

**ARNOLD, HOWEVER, STATED HIS POSITION AT POTSDAM THAT—ALTHOUGH NOT OPPOSED TO USING THE ATOMIC BOMB—EMPLOYMENT OF THE BOMB WAS NOT NECESSARY TO DEFEAT JAPAN**



(Left to right) Maj. Gen. Curtis E. LeMay, Brig. Gen. Haywood S. Hansell, and Brig. Gen. Roger M. Ramey.

**LEADING UP TO POTSDAM, THE SPECIFIC POWER AND POTENTIAL OF THE ATOMIC BOMB WERE NOT KNOWN; AND WHAT EFFECT ITS EMPLOYMENT MIGHT HAVE ON THE JAPANESE WAS ALSO OF COURSE UNKNOWN**

such a thrust, more so than believed to be the case. Japan, he emphasized, “is not a nation composed wholly of mad fanatics of an entirely different mentality from ours.” Prior to the take-over by the military in 1931, he noted, Japan had previously adhered to the norms of international life and discourse. Japan presently had the capacity to recognize the folly of a fight to the finish and to accept an unconditional surrender. Conversely, Stimson thought that an invasion and a horrific fight to the finish, with its impact on the civilian population which would be enlisted in the fight, would be enormously debilitating, with no analogy as to the case of Germany. Thus, he concluded that a *carefully timed warning* be issued to Japan by the allies calling for a surrender “to insure its complete demilitarization for the sake of future peace.”<sup>26</sup> This warning would make clear the overwhelming force that was about to be unleashed with its attendant massive destruction and removal of influence and authority of those who embarked Japan upon conquest. Japanese sovereignty would be restricted to the main home islands. The allied occupiers would withdraw from the Japanese homeland when there has been established a government inclined toward peace, of a character representing the Japanese people.<sup>27</sup>

A number of Stimson’s points found their way into the Potsdam proclamation, most having to do with rebuilding industry and maintaining international trade relations. However, his major point about keeping the institution of the Emperor, was not included.<sup>28</sup> Meantime, on July 16th, at Alamogordo, New Mexico, the atomic bomb was successfully exploded. Reports of the test arrived at Potsdam where Stimson informed Truman and Churchill. On July 24th, Stalin was told about the existence of the bomb.

Then, on the 26th, based on Stimson’s memorandum, the United States, the United Kingdom, and China promulgated the Potsdam Proclamation, which noted that “the full application of our military power, backed by our resolve, will mean the inevitable and complete destruction of the Japanese armed forces and just as inevitably the utter destruction of the Japanese homeland.”<sup>29</sup> The Japanese now had the opportunity to end the war.

In order to do so however, the Japanese would have to break the will of “those self-willed militaristic advisors whose unintelligent calculations have brought the empire of Japan to the threshold of annihilation.” The declaration stated the following terms for the surrender of Japan:

*the elimination of irresponsible militarism; temporary occupation of points in Japanese territory; limitation of Japanese sovereignty to the islands of Honshu, Hokkaido, Kyushu, Shikoku, and minor islands; the return of Japanese military forces to their homes; the punishment of war criminals; the maintenance of industries to sustain Japanese economy and permit the exaction of reparations in kind; eventual participation in world trade relations and occupation by Allied forces until a peacefully inclined and responsible government had been established in Japan.*<sup>30</sup>

The declaration then called upon Japan “to proclaim now the unconditional surrender of all Japanese armed forces, and to provide proper and adequate assurances of their good faith in such action. The alternative for Japan is prompt and utter destruction.”<sup>31</sup> The Potsdam declaration contained nothing about the potential employment of an atomic bomb. In late July, however, the Japanese Prime Minister Suzuki gave his answer to the Potsdam declaration with a “mokusatsu” reaction—treating it “with silent contempt.” It was unacceptable. Emperor Hirohito remained silent.

As far as use of the atomic bomb was concerned, Truman relied heavily on Marshall and Arnold. Leading up to Potsdam, the specific power and potential of the atomic bomb were not known; and what effect its employment might have on the Japanese was also of course unknown. As we have noted, Truman had not known about the bomb until after he became president. Military planning for the invasion had gone forward without knowledge of the bomb’s existence. Arnold was kept informed by Marshall and Stimson. After General Groves’ report of the successful atomic experiment arrived at Potsdam, Arnold met with Marshall, Stimson, McCloy, and Bundy. “This did not come as a complete surprise to me,” Arnold noted, “but I had thought the test was a week or two away. From the information we received, the scientists were very well pleased with the results....The results of that test proved conclusively that we had in our possession the means to wipe out completely large areas of an enemy country.”<sup>32</sup> Thus Arnold immediately grasped the revolutionary importance of the new weapon and its potential for a knock-out blow against Japan.

On July 22nd, Arnold and Marshall met with Stimson to discuss what Arnold termed “the big question”: When would the bomb be ready to use against Japan and what were the proper targets for optimum results? Arnold suggested leaving the issue of targets to General Spaatz, who had planes ready and waiting out in the Pacific for the arrival of the bomb and who knew the cities chosen for the

**“I WAS NOT IN FAVOR OF IT,” SPAATZ WROTE, “JUST AS I HAVE NEVER FAVORED THE DESTRUCTION OF CITIES AS SUCH WITH ALL INHABITANTS BEING KILLED”**

test.<sup>33</sup> On July 24th, Arnold received a report from General Groves detailing the plan and schedule for employing the atomic bombs, termed “special bombs.” The first bomb (gun type), “will be ready to drop between August 1 and 10 and plans are to drop it the first day of good weather following readiness.” The report specified four targets: Hiroshima, Kokura, Niigatu and Nagasaki. Hiroshima was described as an “Army” city; a major port of entry; with large quartermaster and supply depots; and industry and small shipyards. Nagasaki was a major shipping and industrial center on Kyushu. Industrialists and political figures were thought to have fled to all four cities. The report noted that the bomb would be “carried in a master airplane accompanied by two other project B-29s with observers and special instruments. The three B-29s will take off from North Field, Tinian, and fly via Iwo Jima.”<sup>34</sup> Arnold then insisted that Spaatz, commanding the Strategic Air Forces in the Pacific, be given sufficient flexibility in timing and targeting to employ the bomb. This was accepted by Stimson and Marshall. Arnold then forthwith sent Spaatz a cable directing him to be ready to employ the bomb against Japan. On the 25th, the War Department order was signed in Washington by General Thomas T. Handy, acting Army Chief of Staff:

*The 509 Composite Group, 20th Air Force, will deliver its first special bomb as soon as weather will permit visual bombing after about 3 August 1945 on one of the targets: Hiroshima, Kokura, Niigata, and Nagasaki....Additional bombs will be delivered on the above targets other than those listed above....The foregoing directive is issued to you by direction and with the approval of the Secretary of War and the Chief of Staff, USA. It is desired that you personally deliver one copy of this directive to General MacArthur and one copy to Admiral Nimitz for their information.*<sup>35</sup>

The directive was sent to Potsdam and approved by Stimson, Marshall, and Truman. In his memoir, President Truman wrote:

*With this order the wheels are set in motion for the first use of an atomic weapon against a military target. I had made the decision. I also instructed Stimson that the order would stand unless I notified him that the Japanese reply to our ultimatum was acceptable.*<sup>36</sup>

Spaatz’s views on dropping the bomb and the potential invasion are of great interest here in light of Handy’s directive to Spaatz, approved at the highest levels of the War Department. Spaatz in fact insisted on a written order and had carried Handy’s directive with him to Guam. After the dropping of atomic bombs on Hiroshima and Nagasaki, and the Japanese conditional surrender message of August 10th, forwarded to the Swiss and Swedish, Spaatz wrote a memo dated August 11, 1945, not sent to anyone specifically, but apparently to get his thoughts on the record. In it he noted that prior to

the Japanese message of the 10th, he had intended to write to Robert Lovett, “repeating my views toward invasion.” Spaatz recounted that the atomic bomb was first discussed with him in Washington, apparently when he was transferring from command of the USSTAF in Europe to command the Strategic Air Forces in the Pacific. “I was not in favor of it,” Spaatz wrote, “just as I have never favored the destruction of cities as such with all inhabitants being killed.”<sup>37</sup> According to Spaatz, it was pointed out to him, probably by Lovett and others—Arnold, Stimson, and Marshall being at Potsdam—that employment of the bomb would mean that an invasion would not be necessary and thousands of American lives would be saved. As of August 10th, Spaatz noted that an invasion was still planned “and only the surrendering of the Japanese after attacks on their homeland by air will cancel the invasion.”<sup>38</sup> In retrospect, Spaatz always made the point well after the war that in the summer of 1945 the leadership of the Army Air Forces thought that an invasion was not necessary and that the dropping of the atomic bombs was a political decision; the military man followed through. This was clearly the view of the entire AAF leadership.

With the directive having gone out for the use of the atomic bomb, Arnold, Marshall, and Stimson at Potsdam continued to talk over the relevant issues and implications of its employment. In Arnold’s mind, the key question revolved around which targets, if bombed, “would most speedily spell the destruction of industrial Japan.” He was well aware of the race to force Japan to capitulate prior to the mounting of an invasion of the home islands. At the same time, Secretary Stimson, as noted, was much concerned about the potential for enormous civilian casualties. Arnold did not seem overly concerned about this question, returning time and again to the issue of targeting: “There was no doubt that the effect of the atomic bomb would be much severer if it were exploded over an area in a valley, with high ridges on both sides to concentrate the effect of the blast, than if dropped over a coastal plain or over a large, flat area inland.”<sup>39</sup> Arnold also put forth to Stimson and Marshall the idea of dropping an atomic bomb in a harbor. He thought that such an explosion:

*sunk hundreds of feet in the mud beneath the water, might well destroy the surrounding area. I suggested that we evacuate a Japanese harbor after the war, put ships in dock and at anchor, and then try it. In that way we would learn what might happen to one of our land-locked harbors in case the same thing occurred to us when we least expected it. However, the test was never carried out.*<sup>40</sup>

Arnold thought that Soviet Premier Stalin’s promise at Potsdam to declare war on Japan was “good news,” as it might result in air bases closer to Japan, “from which we could literally rip Japan to pieces.”<sup>41</sup> Given the difficulty that the AAF had experienced in dealing with the Soviets over potential Siberian air bases, along with the progress of



Preparing to test the first atomic bomb at the Trinity site in New Mexico.

**ARNOLD... INFORMED THE COMBINED CHIEFS THAT AIR SUPREMACY OVER JAPAN WAS COMPLETE AND THAT THE BOMBING CAMPAIGN WAS NOT MEETING WITH AIR RESISTANCE**

the incendiary bombing, this came as a most curious comment by Arnold. He then informed the Combined Chiefs that air supremacy over Japan was complete and that the bombing campaign was not meeting with air resistance. The Japanese air force was a shambles, had lost most of its pilots, and was short of fuel. Aircraft maintenance was a low point. In reply to Stalin's point that now that the war in Europe was over, the next meeting should be in Tokyo, Arnold emphasized to the allied leaders "that if our B-29s continued their present tempo there would be nothing left of Tokyo in which to have a meeting."<sup>42</sup> This apparently was Arnold's oblique way of informing Churchill, Stalin, and Truman that the "present tempo" of B-29 *conventional* bombing could drive Japan out of the war. Again, Arnold was not about to make a flat prediction as to when Japan would capitulate. Historian Michael Kort has pointed out that Arnold's emphasis upon strategic bombing concomitant with his reluctance to spell out a strategy or surrender date in fact provided support to King and Leahy's position: "While Army Air Force General Henry (Hap) Arnold declined to advocate a specific strategy *openly*, his emphasis on strategic bombing lent support to the overall naval strategy."<sup>43</sup>

Following promulgation of the Potsdam declaration and the end of the conference, Arnold looked forward to continuing redeployment of air forces to the Pacific theater. He planned to operate B-17s and B-24s from Okinawa as well as medium bombers. He had an interim report of the U.S. Strategic Bombing Survey on the European theater in hand, which emphasized: "The strategic air offensive... effectively paralyzed the German war economy and thereby contributed in a decisive measure to the early and complete victory which followed."<sup>44</sup>

Meanwhile, the Joint Target Group had been briefed by various Strategic Bombing Survey teams back from Europe. The Strategic Bombing Survey personnel emphasized that Japan's war-making capability was not comparable to Germany's in the summer of 1945; it was already approaching collapse. As of late June, the Japanese were unable to stem the tide of air attack: "Japan's position as a strong military and industrial power is already terminated."<sup>45</sup> The U.S. Strategic Bombing Survey

group recommended as top priority a sustained attack on the Japanese transportation system, the rail network and shipping. As far as attacks on urban industrial concentrations were concerned, these were to be conducted only if "the most efficient method of destroying such precision targets is by area rather than precision attack."<sup>46</sup> Here was still more corroboration of the potential effectiveness of area bombing, targeting civilian morale and the work force. Based on the Strategic Bombing Survey briefings, the Joint Target Group concluded that continued incendiary attacks would have a most significant effect on Japan, accelerating "the collapse obtainable eventually through the engagement of large land forces."<sup>47</sup>

In addition to the report of the Joint Target Group, Arnold's staff at Potsdam had reached some important conclusions about the incendiary campaign against Japan. Statistics as to the number of cities attacked or individual industrial plants destroyed failed to reflect either the strategic concept or the significance of the results. In July, the campaign had been extended to small cities. Gifu was cited as an area that included industry, a transportation nexus, aircraft production, and an "important residential area for the labor force." The staff pointed out that the B-29 attacks "must be evaluated on a qualitative as well as a quantitative basis." Destruction of specific, critical small industrial plants might be more important than smashing a large steel mill. More importantly, Arnold's staff thought that modern conflict equaled "total war in which the importance of the individual plant tends to be somewhat decreased while the aggregate importance of many plants, and in fact all economic resources, including the labor force, tends to be increased."<sup>48</sup> Here was corroboration that area incendiary attack—resulting in enormous numbers of labor force evacuees—continued to be the first priority of the B-29 campaign and required intensification.

Arnold followed up by proposing to the Joint Chiefs that operations against Japan should, first of all, place "complete emphasis" on the strategic air offensive, throwing everything into an intensive onslaught, complemented by the naval and air blockade. While present planning for strategic bombardment "is expected to create conditions favorable to invasion of the Japanese homeland on November 21st, it is believed that an acceleration and augmentation of the strategic air program culminating in a land campaign, will bring about the defeat of Japan with a minimum loss of American lives."<sup>49</sup> Here Arnold felt the need to reiterate to the Joint Chiefs that the Joint Target Group had estimated that the economic and military capacity of Japan could be destroyed by dropping 1,600,000 tons of bombs. This kind of air campaign, according to Arnold, could destroy the Japanese nation and might well result in "a capitulation of the enemy without an invasion." At the very least, it would assure the success of an invasion, concomitantly reducing the loss of American lives.<sup>50</sup> There is little doubt what Arnold had in mind here: Japan could be forced to surrender without a ground assault on

Trinity site blast after 16 milliseconds. Its success gave Truman an extra card to play at Potsdam.



**THE INITIAL PROJECTIONS PRESENTED BY MARSHALL AND MACARTHUR TURNED OUT TO BE FLAT WRONG...THE JAPANESE WERE PREPARING A MASSIVE EMPLOYMENT OF SUICIDE WEAPONS TO CONTEST THE KYUSHU LANDING**

the homeland. And he was not stating this clearly to the Joint Chiefs. Arnold's staff also focused on the connection between attacking the Japanese transportation network and the country's food supply. A successful outcome might result in starvation and thus force Japan to surrender.

At Potsdam, where urgent issues were being considered, Arnold convened his staff to present his vision of what needed to be accomplished in the future. "The war with Japan," Arnold announced, "is over as far as creative work is concerned. The die is cast. There is very little we can do other than see the planes and personnel with supplies get over there."<sup>51</sup> Arnold's eye was on the future, making certain that von Karman's Scientific Advisory Group, which he had established, could provide "a Buck Rogers program to cover the next 20 years."<sup>52</sup> He did not want to see the air forces ever again caught as unprepared as prior to Pearl Harbor.

It will be recalled that on May 14, 1945, the Joint Chiefs of Staff had directed the invasion of Kyushu (OLYMPIC) with a target date of November 1, 1945. In regard to the B-29 force, the Joint Chiefs stated: "The Commanding General, Twentieth Air Force, will cooperate in the plans, preparations and execution of Operation OLYMPIC and in the continuance of the campaign in Japan. At appropriate times, to be determined by the Joint Chiefs of Staff, the Twentieth Air Force will come under the direction of the appropriate commander for the support of operations directed above."<sup>53</sup> In the summer of 1945, the Allies' ability to decipher the Japanese military codes (ULTRA) and decrypt the enemy's Foreign Ministry communications (MAGIC) dramatically altered calculations for the Kyushu invasion and factors pertaining to employment of the atomic bomb. In late May, the Joint Chiefs concluded that: "The Japanese know that successful Allied lodgement in Kyushu would result in effective interdiction of communications between Kyushu, Honshu, Shikoku, and the Continent. Therefore, the Japanese will use all available ground, sea, and air forces to resist a landing on Kyushu and will defend desperately to prevent Allied consolidation on the island."<sup>54</sup> Prior to the

June 18th White House meeting, MacArthur's intelligence estimated that Japanese strength on Kyushu by about November 1st would number approximately 300,000, enabling the Allies to outnumber the Japanese defenders by three to one, indicating a high probability for a successful amphibious landing. This assumption formed a basis for Truman's discussion on the 18th with the Joint Chiefs.

At this meeting, Marshall informed Truman that he estimated that eight Japanese divisions or about 350,000 troops would defend Kyushu. Marshall also stated that it would be difficult for the Japanese to reinforce Kyushu. Admirals King, Leahy, and Lt. Gen. Ira Eaker representing Arnold, all supported the Army's position for an invasion (OLYMPIC). However, in late July, more Japanese divisions had deployed to Kyushu, possibly bringing the total to ten defending the southern third of the island where the OLYMPIC assault was to take place. Thus, the initial projections presented by Marshall and MacArthur turned out to be flat wrong. In fact, at the time of the June 18th meeting, the number of divisions on Kyushu had already reached the number that Marshall estimated on November 1st, still more than four months away. In mid-July, by the time Truman reached Potsdam, the original invasion calculus presented on the 18th had been shattered. Moreover, deciphered communications indicated that the Japanese were preparing a massive employment of suicide weapons to contest the Kyushu landing:

*Messages (decrypted) in late June described additional bases for piloted suicide torpedoes (Kaiten) and preparations for using oil and gasoline incendiary devices. Intercepted transmissions in July dealt with the deployment of a flotilla of 940 suicide aircraft to 18 concealed bases on Kyushu, as well as extensive efforts to reconfigure floatplanes for suicide missions.*<sup>55</sup>

Also, it seemed clear that, according to intercepted communications, the number of Japanese divisions in southern Kyushu was more than double the



Truman and Stalin at Potsdam.

**IN LIGHT OF THE BUILDUP ON KYUSHU, IN EARLY AUGUST 1945, THE JOINT WAR PLANS COMMITTEE SOUGHT A MORE LIGHTLY DEFENDED TARGET. THIS THRUST WAS APPARENTLY SUPPORTED BY GENERAL MARSHALL**

number initially estimated for the southern part of the island. The Japanese had decided to vigorously contest the potential American landings on southern Kyushu. In early April 1945, the official Japanese Army directive for opposing the invasion—Ketsu-Go Operations—called for crushing the enemy “invading key areas of the mainland while the invasion force is still at sea. Enemy forces which succeed in landing will be swiftly attacked by resolute defenders in order to seek the decisive victory.” The aim was to disrupt the landing by targeting the American convoys.

These intelligence estimates were being forwarded to the highest levels of the U.S. military in Washington. On August 4th, two days prior to the atomic attack on Hiroshima, a Joint War Plans Committee memorandum to the Joint Planning Staff recommended that: “The possible effects on OLYMPIC operations of this buildup and concentration” of Japanese forces should result in commanders reviewing “their estimates of the situation, reexamine objectives in Japan as possible alternated to OLYMPIC and prepare plans for operations against such alternate objectives.”<sup>56</sup> The Joint Staff planners informed CINCPAC that “operations against extreme northern Honshu, against the Sendai area, and directly against the Kanto Plain are now under intensive study here.”<sup>57</sup> The message here was that a fundamental re-examination of invasion plans was required. This had been favored by King, Leahy, and Arnold for some time, given their concern over heavy American casualties in any invasion.

The Japanese military believed that the *Ketsu-Go* strategy of contesting or even repelling the enemy invasion could in fact succeed. Field commanders thought that morale in their forces remained high for *Ketsu-Go*.<sup>58</sup> An assessment after the war by Major General Masakazu Amano, of the Imperial Headquarters, emphasized:

*We were absolutely sure of victory. It was the first and the only battle in which the main strength of the air, land and sea forces were to be joined. The geographical advantages of the homeland were to be utilized to*

*the highest degree, the enemy was to be crushed, and we were confident that the battle would prove to be the turning point in political maneuvering.*<sup>59</sup>

Leadership of the Imperial Army counted on success on the invasion beaches to foster a negotiated political settlement far short of unconditional surrender.

In fact, in light of the buildup on Kyushu, in early August 1945, the Joint War Plans Committee sought a more lightly defended target. This thrust was apparently supported by General Marshall, who nonetheless continued to insist on an invasion. The problems associated with invasion and the unconditional surrender policy were aptly drawn by Douglas J. MacEachin in his landmark study of U.S. signals intelligence and invasion planning: “Achieving the surrender and unrestricted occupation of the entire national territory of an opponent steeped in a warrior tradition and a history as a great power, without having captured any portion of that territory, posed an extraordinary challenge.”<sup>60</sup> The problem was whether unconditional surrender could be achieved without an invasion of the Japanese homeland. The enormous enemy buildup on Kyushu increased the pressure in July and August for an intensification of the bombing and blockade and perhaps a major departure in strategy. In fact, the Joint War Plans Committee in early August raised the possibility of placing the Kyushu invasion on hold while at the same time ramping up the air campaign from Okinawa. Even with overwhelming bombing support, the Joint Chiefs considered that the updated figure on the enemy’s buildup resulted in a problematic ratio of invasion troops to defenders. Again, time was the key factor; it was possible that air and sea attacks could knock Japan out by December 1945, although this would not be soon enough to alter MacArthur’s and Marshall’s position favoring an invasion. In retrospect, Marshall stated that he had planned to use atomic bombs on the Kyushu beaches prior to an allied invasion.<sup>61</sup>

Overall, the revised intelligence calculus was of great concern to the Joint Chiefs. It showed that the Japanese were prepared to inflict heavy, if not prohibitive, casualties on any invasion force, thus attempting to force the United States and its Allies to compromise the unconditional surrender policy. By the summer of 1945, the issue for Japan was what surrender terms might be acceptable. Even while Japan attempted to negotiate with the Soviet Union, at the same time it was preparing in the homeland for a fight to the finish. There is no doubt that Truman, Stimson, Marshall, and Arnold received this critical intelligence at Potsdam. Stimson, Secretary of the Navy Forrestal, and Arnold all noted in their diaries that they were privy to MAGIC communications. As it turned out, postwar reports emphasized the problematical nature of the proposed Kyushu invasion: “Judging by the difficult terrain; the scarcity and poor quality of the roads, the small size and capacity of the railroads and tunnels, and the prevailing weather con-

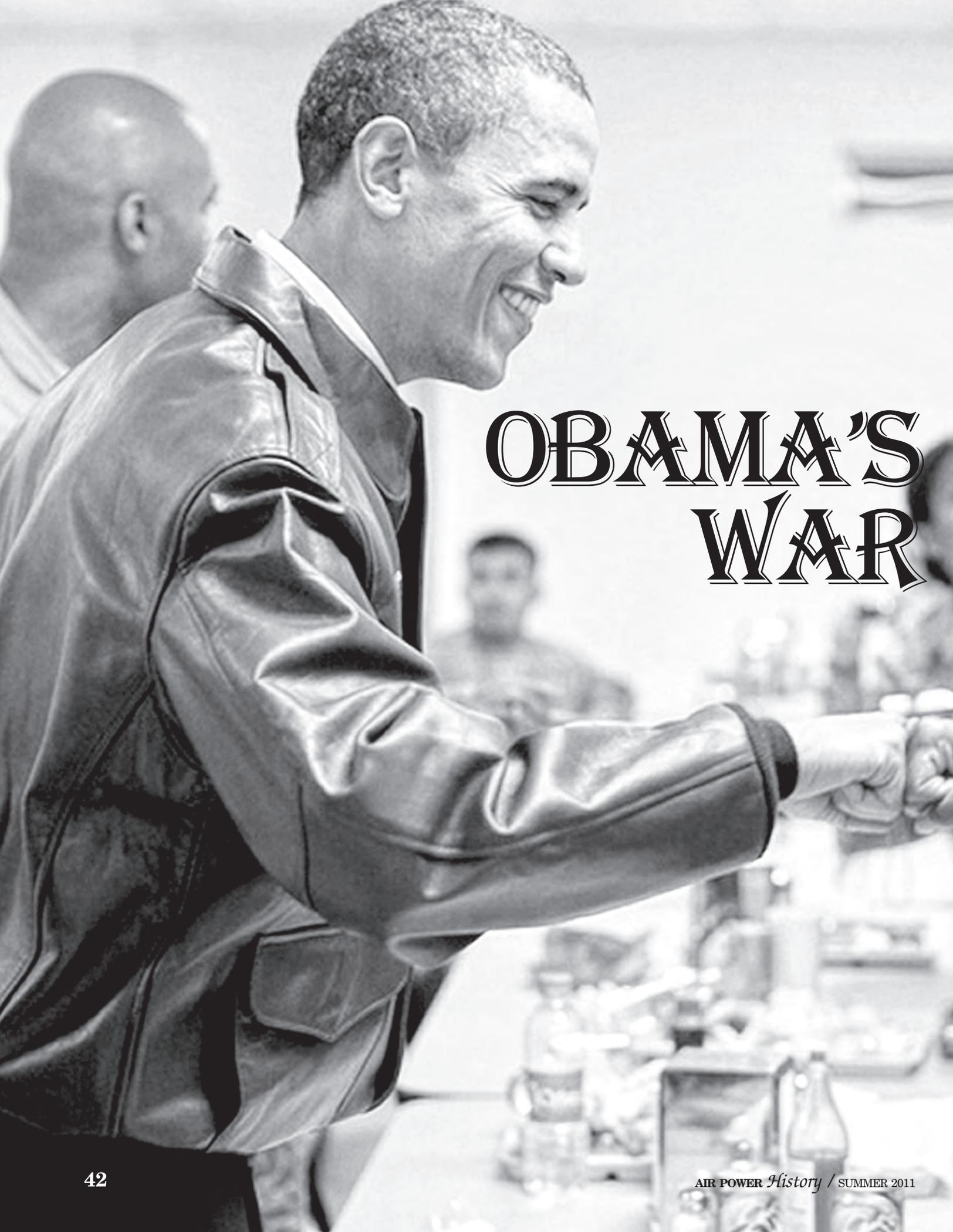
ditions, it was fortunate that the invasion of Kyushu took place after the surrender and not before.<sup>762</sup>

Even so, most historians believe that the decision to employ the atomic bomb had for all practical purposes been made by the start of the Potsdam

conference. This view is sustained by archival documentation and the sequence of events. There is no doubt that President Truman and his advisers were influenced by their grave concern over potential invasion casualties and a quick end to war as a way of enforcing unconditional surrender terms. ■

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# OBAMA'S WAR



Neil Sheehan

(Overleaf) President Barack Obama meets U.S. troops at a dining hall March 28, 2010, Bagram Airfield, Afghanistan. (White House photo/Pete Souza.)

In another of his superbly reported insider accounts, *Obama's Wars*, Bob Woodward recounts how a new President may well have embroiled himself in a war that could poison his presidency—just as his predecessor, George W. Bush, destroyed his with a foolhardy war in Iraq and Lyndon Johnson and Richard Nixon were ruined by the war in Vietnam.

The grim mountains and deserts of Afghanistan are a boneyard of invading foreign armies. The British rulers of colonial India sent an Anglo-Indian army into Afghanistan in 1839 to establish it as a buffer state against the advances of imperial Russia in Central Asia. The enterprise faltered against Afghan resistance, and the main garrison at Kabul—about 4,500 troops and 12,000 family members and camp followers—decided to retreat back to India in January 1842. Afghan tribesmen fell upon them in the snows of the mountain passes and slaughtered them without pity. Only one man, a doctor named William Brydon, reached safety. A few others were spared as prisoners and subsequently rescued.

One-hundred and thirty-seven years later came the turn of the mighty Soviet Union. In December 1979, Leonid Brezhnev dispatched the lead elements of a 110,000-man Soviet expeditionary force to rescue Afghanistan's collapsing communist regime. The Red Army was a proud army. It had smashed Adolf Hitler's *Wehrmacht*, once thought

U.S. Army Col. Robert Pricone escorts Afghan President Hamid Karzai during a special ceremony at the Pentagon. Colonel Pricone is commander, 3rd U.S. Infantry Regiment, The Old Guard. (DOD photo/Helene C. Stikkel.)



invincible. But after ten years of fruitless Afghan warfare, the last elements of a broken and dispirited Soviet force climbed into their armored vehicles and headed north, back to the U.S.S.R.

The American war in Afghanistan began, of course, in 2001, after the September 11 attacks on the World Trade Center and the Pentagon, and the refusal of the Taliban leadership to hand over Osama bin Laden and the other al-Qaeda leaders who instigated and planned them. Bush, however, neglected Afghanistan in favor of his war in Iraq.

According to Woodward's narrative, Obama seems to have first stepped into the Afghan war in a somewhat absent-minded way, granting the military 21,000 troops for the conflict, without much examination, during the opening months of his administration.

But by fall, the commanders are back for more. Lt. Gen. Stanley McChrystal, an aggressive and highly regarded officer (until he blew himself up with disparaging comments about his colleagues and superiors in a *Rolling Stone* interview) had been appointed the new commander for Afghanistan on May 11, 2009. He had toured the country to reassess the situation and had handed in his report at the end of August.

Soon the bad news arrives from the Pentagon; McChrystal wants an additional 40,000 troops, enough reinforcements to virtually equal the size of the Soviet commitment—108,000 U.S. forces in Afghanistan when added to the 68,000 already authorized for deployment there. The request is backed by Robert Gates, the secretary of defense; Adm. Mike Mullen, the chairman of the Joint Chiefs of Staff; and Gen. David Petraeus, the most prestigious officer in the Army, thanks to his application of counter-insurgency tactics in Iraq, and the chief of U.S. Central Command, which covers American forces in the Middle East and South Asia from its headquarters in Tampa. (Petraeus took over as commanding general in Afghanistan after McChrystal was sacked for his indiscretion in June 2010.)

As there is minimal mention of Iraq in the book, Woodward takes his title from the resulting arguments that drag on month after month through the fall of 2009 in the White House Situation Room in the basement of the West Wing.

The military wants the 40,000 with no strings attached, no promise that this will be the last request, and no fixing of a date when Obama can

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*This article is drawn from Mr. Sheehan's review of Bob Woodward's book, Who Loses Obama's Wars: The Making of Obama's Vietnam New York: Simon & Schuster, 2010. The review appeared in The Washington Post on September 30, 2010.*



Secretary of Defense Robert M. Gates looks over his notes as he talks with members of the press on Kandahar Air Field, Afghanistan, Dec. 11, 2008. (DOD photo/Tech. Sgt. Jerry Morrison.)

begin withdrawing them. The President sees the pit opening before him. “This is not what I’m looking for,” he says, “I’m not doing ten years. I’m not doing a long-term nation-building effort. I’m not spending a trillion dollars.” He wants another, more flexible option with fewer troops and a built-in date to start withdrawals. But the military won’t give it to him. Gates, Mullen, and Petraeus hold fast to the original request and put additional pressure on Obama through their supporters in Congress and the media. (The 29,000 NATO forces in Afghanistan do not figure in the argument because many are non-combat support troops, and because it is uncertain how much longer allied countries will maintain their contributions.)

Finally, at the end of November, the President surrenders and gives the military most of what it demands. In a strategy memorandum dated November 29, 2009, which Obama dictated himself and which Woodward prints verbatim at the end of the book, the President approves a 33,000-troop surge for Afghanistan, bringing the U.S. force level there to 101,000. Obama estimates the cost at \$113 billion per year. He specifies July 2011, as the time when reductions are supposed to begin but then undercuts himself by giving the military an escape

An Afghan boy works in an opium poppy field in Helmand province.



hatch: The reductions are to be “based on progress on the ground.”

Vice President Joseph Biden, who stood by the President’s side and fought hardest against the military during the months of arguments in the Situation Room, warns Obama, as the President is about to hand out his strategy memorandum, that they could get “locked into Vietnam.” The comment is ironic, because Obama’s strategy for Afghanistan bears a remarkable resemblance to Nixon’s “Vietnamization” strategy.

Under Vietnamization, Nixon bought time with the public at home by gradually withdrawing U.S. troops (he still spent the lives of more than 20,000 in the process) while shifting the burden of combat to the Saigon government’s forces and simultaneously strengthening them so they would presumably be able to stand up to their communist opponent once the last American combat troops departed. Tanks, armored personnel carriers, artillery, and infantry weapons of all sorts were lavished on Saigon’s army and jet fighter-bombers and helicopters on its air force.

But unless they are mainly mercenary, armies usually reflect the nature of the society from which they are drawn, and Saigon’s society was ruled by a clique of generals and their wives and hangers-on whose incompetence and venality were monumental. When the North Vietnamese army launched another offensive in 1975, the Saigon forces possessed all they needed to fight, except the will. They collapsed and fled faster than their enemy could catch up with them.

In his strategy memorandum, Obama similarly posits strengthening the Afghan armed forces and police so that he will be able to gradually reduce U.S. troops. The rub is that Obama’s ally, Afghan president Hamid Karzai, and his half-brother, Ahmed Wali Karzai, preside over a massively corrupt government and show no evidence of willingness to reform it. Woodward also tells us that Hamid Karzai has become mentally unstable, given to severe mood swings and is “increasingly delusional and paranoid.” It would be a miracle if an Afghan national army and police force able to take on the Taliban could be created in this void of morality and competence.

And the Taliban and the Karzai brothers may not be the only problems Obama encounters over Afghanistan. American generals like David Petraeus are “can-do” leaders who want to win their wars. They have a distaste for the messy compromises of disengagement. As the July 2011 deadline for the first withdrawal draws nigh, General Petraeus was reported to be opposed to taking out any substantial number of troops.

“Got hope?” was one of the rallying cries of Obama’s supporters during the 2008 election campaign. He will need hope in Afghanistan. The Taliban obviously cannot defeat the U.S. Army in set-piece battles, but it doesn’t have to do that to win the war. It can bleed us of men and treasure, year after year, until the American people have had enough. ■

**Every Day a Nightmare: American Pursuit Pilots in the Defense of Java, 1941-1942.** By William H. Bartsch. College Station: Texas A & M University Press, 2010. Maps. Tables. Photographs. Notes. Appendices. Glossary. Bibliography. Index. Pp. xxii, 506. \$40.00 ISBN: 978-1-60344-176-6

Some Army Air Forces of World War II are better known than others. Everyone knows the tragedy of Pearl Harbor, when virtually all American air power was destroyed. Many know of the heroic Philippines defense after the initial disaster of the December 8 attack, when much of the Far East Air Force (FEAF) was also destroyed on the ground. A story many don't know is the one Bartsch tells here of the Army pursuit pilots who fought alongside their allies in the doomed attempt to stop the Japanese advance into the Dutch East Indies in the early days of the war.

Bartsch determined to write this story after reading a wartime article about seventeen pilots in the Philippines evacuated to Australia to ferry pursuit planes back to the Philippines. They never made it back; by the time they got to Australia, the return route had been cut off by the Japanese. They then became the nucleus of the FEAF fighter force created to fight in Java. Bartsch took up the correspondent's challenge that someone must tell the full story of these brave men.

The Java campaign was one in the long series of Allied defeats inflicted by the Japanese at the outset of World War II due to the Allies inadequate preparation, insufficient numbers of everything, obsolete equipment, poor leadership, and even worse coordination. This was the cauldron into which the pursuit pilots were thrown. It is not a story of triumph over the odds, like the fabled Flying Tigers. Rather, it is a signal lesson in the need for preparation, training, and planning to face and defeat potential threats.

Bartsch extensively researched primary sources, such as official reports, diaries and interviews with survivors to develop the story. He references Japanese accounts primarily to confirm or refute Allied sources, but is evenhanded in their use. This adds to his credibility and the book's accuracy. Bartsch is a good storyteller and uses personal anecdotes and information to bring a human face to a confused and ultimately tragic campaign. These young men show as brave, foolish, frightened, and determined to do their duty in a situation the book's title points out was a nightmare. Bartsch discusses other aspects of FEAF and ABDACOM (American/British/Dutch/Australian Command) operations but limits this to

the impact on the story of these pursuit pilots. His focus keeps the book from becoming too diffuse or lengthy.

Bartsch brings a lifelong interest in his subject and a passion for accuracy that serves him and the reader well. While not a trained historian, his methods are meticulous as is apparent in the depth of information and variety of sources he uses. His epilogue sums up the effectiveness (or lack thereof) of the Java operations and presents an excellent summary of the military cost. He also addresses relations between the Dutch and Americans in particular and some of the problems of shared and joint command and how this was perceived by both sides—a very useful discussion given today's ongoing operations.

This book is thoroughly researched, well written, and engaging. Military officers of all services can benefit from the discussions of training, employment, and command and control in difficult circumstances. Airmen, in particular, will benefit from this look at a time when we didn't operate with overwhelming technical and material superiority. We have become so accustomed to superiority that it is well to remember we may not always have such advantages. The cost might dissuade some but the book is well worth it.

*Lt. Col. Golda Eldridge, USAF (Ret.), Ed.D.*



**The Russian Military Air Fleet in World War I, Volume 1: A Chronology 1910-1917, and Volume 2: Victories, Losses, St. George Awards, Romanian and French Awards.** By August G. Blume. Atglen, Pa.: Schiffer Publishing, 2010. Photographs. Maps. Illustrations. Tables. Glossary. Bibliography. Appendices. Pp. 334 (Vol 1) and 396 (Vol 2). \$79.99 each ISBN: 978-0-7643-3351-4 and 978-0-7643-3352-1

The late Augie Blume devoted over two decades to disclose the details printed in this two-volume work on the Russian Military Air Fleet in World War I. These books are an excellent presentation of his research into early Russian aviation, a subject which has slowly developed here in the west. The subject is presented in the form of a compendium with names, facts, dates, places, and a variety of associated information relating to Russia's aviation activities prior to and during the First World War. The facts and details have been derived from a variety of sources, none more important than the records of the Central State Military-Historical Archive (TsGVIA) that were delved into by a devot-

ed group of historians.

The books' principal asset is the magnitude of data accumulated, sieved, and gleaned for dates, locations, individuals, and operational units. They provide an excellent resource for further mining of Russian air-operations during the period. Many of Vol. 1's 300-plus, well-captioned photographs appear for the first time in a western publication; many have not been reproduced before anywhere. Having visited TsGVIA in 1988, I can assert that a huge number of combat reports still existed from the 1914-1917 and even 1918 period.

It is not hard to see how difficult it must have been to distill such a massive amount of information. But even a two-volume set can't cover it all; what Blume provided was the essentials so that others may climb on the shoulders of giants to produce further studies with closer definition to particulars.

The first volume is not a narrative study. As the title states, it is a chronological view of the subject. It contains a great deal of information and is perhaps the most important research volume on the subject printed in English. The extensive appendices cover a vast array of subjects, such as aircraft manufacturers, military rank equivalents, and images and narrative details of aviation badges. The one drawback that should be rectified by the publisher is the lack of an index for cross-referencing; Blume passed away probably before he could complete this key element. Despite this shortcoming, Vol. 1 is an important work and invaluable resource.

The second of two volumes deals with the activities of the Imperial Russian military air services from 1910 to the end of the war in 1917. As the title implies, it deals mainly with the victories and losses of these combined services, but also covers in detail the St. George awards presented to both Russian and foreign military personnel.

Blume lays out the activities of military aviation in detail. As in the first volume, these are presented in a chronological order with as much detailed information as one would expect after two decades of research. When available, the identities of the combatants on both sides have been provided, thus making the book all the more valuable. There are over 300 well-identified images that illustrate the activities of the Russian air fleet as well as some of those carried out by the German, Turkish, and Austrian air services.

As expected, this volume again contains no index. This limits the reader's ability to follow the activities of individuals, units, and bases spread out from the Baltic to the Black Sea. Another missing link for research purposes is the lack of

citations. Given the fact that the vast quantity of entries is presented in a chronological order, this deficiency may not be unreasonable, but citations would have been nice for research purposes. Also, the bibliography provided in the first volume does contain an ample listing of publications and archival sources in both English and Russian; these should keep any researcher busy for years.

The St. George Awards chapter is well established and clearly delineates the various levels of the order presented. It also includes the all-important narrative on those who were awarded this order. Although the author notes the section is incomplete, it is well researched. It is also evident that what has been documented here is quite extensive. The follow-up section on Russian, Romanian and French orders and medals is also well done and includes photographs of the various decorations presented to Russian and allied personnel. Thankfully the section is well written and outlines in clear terms the background and level of the various awards and orders.

While there are some deficiencies in these books which are more to do about form than content, they will unquestionably remain as important works and valuable sources of information on a topic period of aviation history not well defined and nearly forgotten.

*Carl J. Bobrow, Museum Specialist,  
National Air and Space Museum*



**Boeing 707, KC-135 and Their Civil and Military Derivatives, From the "Dash 80" to the E-8 J-STARS.** By Dominique Breffort. Paris: Histoire et Collections, 2008. Tables. Illustrations. Photographs. Notes. Pp. 240. \$49.95 ISBN: 978-2-35250-075-0

The USAF is now in the third chapter of the ten-year KC-X acquisition story, attempting to replace the ubiquitous KC-135. This book tells, in an eye-catching, readable way, the story of the C-135, Boeing 707 and why it is considered *ubiquitous*. Breffort provides us with a very complete, colorful, and, well-written view of this important family of aircraft that revolutionized the civil passenger, military transport, and air-refueling areas, moving all into the jet age.

Breffort discusses Boeing's post-war move into the civilian market following development of the B-47 and B-52 bombers. Although paper studies of a jet-powered airliner began in parallel with the B-52 program, Boeing's attempt to sell

the USAF a jet tanker was rebuffed due to budget constraints. Boeing decided to start a civilian transport beginning in 1951. By April 1952, they had put \$16 million of their own money on the table to begin work on the jetliner prototype. Although USAF orders were hoped for, development was certainly considered a gamble, especially with Douglas announcing their own DC-8 jet airliner development. Rollout of the "Dash-80" prototype on May 15, 1954, culminated the design and development phase. However, Breffort only slightly mentions the Dash 80's most famous day in August 1955, when test pilot Tex Johnston twice barrel-rolled the one and only prototype over a huge crowd at the Seattle Gold Cup Boating Competition. Many believe this demonstration sold the 707 as a strong, safe aircraft.

Development of the Boeing 707 (from the original -120 through the -420 models), shortened Boeing 720, and cargo variants is covered in the next few chapters. These are illustrated with multi-source photographs in both black-and-white and color. The outstanding feature of this book is Andre Jouineau's full-color side-view profiles in the schemes of various worldwide commercial airlines that flew 707s. Many of these companies (e.g., Pan American, Western, TWA, Braniff, and Continental) no longer exist. There are also comprehensive tables on the 707 models delivered to each airline.

But the 707 is only half of the Dash 80 development story. Breffort describes the military versions as comprehensively as the civilian ones. His first military chapters cover the elegant transports epitomized by the VC-137C (Air Force One), the E-3 AWACS, the Navy's E-6 Mercury, the E-8 J-STARS, and various foreign air force aircraft. Rather oddly, he then digresses into a chapter on 707 details (descriptions of wing, tail and fuselage structure; interior configurations; cockpit diagrams; and photographs) before delving into the KC-135.

In the C-135 section, Breffort comprehensively presents USAF requirements and the role of Gen. Curtis E. LeMay in bringing the -135 to the USAF. The first chapter covers development and subsequent upgrades that apply to all -135s. He then covers reconnaissance and surveillance versions, treaty monitoring WC- and OC-135s, EC-135 command posts, various test beds, and, of course, the KC-135 tanker. This is a complicated and sometimes convoluted story, as the USAF has continually upgraded the aircraft and individual C-135s have gone through as many as four model designations during their careers. The USAF, starting with the original KC-135A and running through

the entire alphabet to the EC-135Y, has had to re-use designations a second time. Breffort attempts to cover all configurations and some operations, but the information is occasionally inaccurate—expected with the RC-135s and some test-bed models. Again, the numerous color photographs and multiple pages of color profiles help the reader navigate the often confusing thicket of model designations, external configuration changes, and camouflage in the 55-year history of military C-135 use.

The final chapter is another "in-detail" section, this time on the KC-135. The tables at the end of the book contain production details for each of the 1,010 707s, designations of all military versions and variants, small descriptions and two-inch profiles of each KC-135 and derivatives, and a comprehensive serial number listing. No index is included, but finding particular information is not too difficult, given the chapter arrangement.

For those looking for a fairly complete history of the Boeing 707 and KC-135 in a good English translation of the original French, plenty of colorful photographs and side view plates, and printed on high-quality slick paper, this book is a bargain. It provides a very good reference for this important aircraft; but, given on-going military operations, we will need a new edition in another ten years.

*Maj. Willard H. Strandberg, Jr. USAF (Ret.), Member, AFHF Board of Directors, and former KC/RC-135 navigator with 3,800 hours*



**Eyes in the Sky: Eisenhower, the CIA, and Cold War Aerial Espionage.** By Dino A. Brugioni. Annapolis, Md.: Naval Institute Press, 2010. Photographs. Notes. Appendices. Bibliography. Index. Pp. xiv, 466. \$36.95. ISBN: 978-1-59114-082-5

Way back when, there was a TK-SCI security clearance (Talent Keyhole—Sensitive Compartmented Information). If you had it you were one of the lesser gods; if you didn't, you were a mere mortal and not privy to some of the most exciting and closely held intelligence documents and pictures. *Talent* referred to information derived from the photos taken by U-2 high altitude aerial reconnaissance aircraft, and *Keyhole* to the same type product taken by the Corona satellites. Today you can go down to the National Air and Space Museum Mall in Washington, D.C., and see a real U-2 aircraft and a Corona film-return re-entry capsule, both unclassified.

Brugioni, a CIA veteran, has done a

wonderful job of taking us back into the early days of post-World War II aerial reconnaissance to examine what was accomplished and who was responsible. The primary task was to penetrate the airspace of the secretive Soviet Union to try to ascertain the seriousness of the threat to the Free World. Not long after fighting ended in 1945, the USSR had aggressively moved into a number of sovereign nations and established total political control. The former prickly ally had become a clear enemy which had an appetite for conquest.

The hero of Brugioni's book is U.S. President Dwight D. Eisenhower (1953-1961), who encouraged and supported development and operational employment of the U-2 aircraft and, later, the Corona satellite. Eisenhower perceived the potential dangers involved in rivalry between the USSR and the United States. He proposed an "Open Skies" program which would allow each nation to inspect, from the skies, what the other nation was doing in order to reduce fears and a potential armaments race. The Soviet Union rejected "Open Skies" out of hand. Krushchev's son later remarked that his father was deathly afraid of the U.S. finding out how weak the Soviet Union actually was, lest it attack.

Eisenhower then turned the CIA loose to unilaterally determine the facts of Soviet strengths and weaknesses, particularly those relating to development of nuclear weapons and their delivery by manned bombers and, later, to long-range ballistic missiles.

I participated in intelligence activities during my career, first in submarines supporting the collection of COMINT and SIGINT (communications and signals intelligence), and later in direct HUMINT (human intelligence) collection as a Defense and Naval Attaché. I found Brugioni's accounts of the U-2 development and employment and that of the various satellite programs of immense interest. That said, the book can be a bit difficult to follow as it goes back and forth between various programs and timelines. Nevertheless, it is well worth reading. Unfortunately, it lacks a glossary that, given all the acronyms used, would be very useful. There are also occasional errors that should not have slipped by the editors. On page 298 a sentence appears with reference to the Manned Orbital Laboratory (MOL) program, "President Nixon finally axed the program in June 1969." Later, on page 406, he refers to a Kissinger memo dated September 23, 1971, reporting that the President has decided against further development of the MOL. If the two are not contradictory, a footnote would have been in order.

USAF readers will take note of Brugioni's apparent bias towards CIA over USAF. Still, a good read.

*Capt. John F. O'Connell, USN (Ret.),  
Docent, National Air and Space Museum*



**Rockets and People, Vol. III, Hot Days of the Cold War.** By Boris Chertok. Washington DC: NASA History Division, 2009. Photographs. Notes. Glossary. Index. Pp xxix, 796. \$49.95 ISBN: 978-1-59114-940-8

In the U.S., the names associated with the space program—Werner von Braun, Christopher Kraft, John Glenn, Vanguard, and Mercury—are, and were at the time, well known. We watched in fascination as early attempts to launch an Earth-orbiting satellite failed (Vanguard I) and then succeeded with Explorer I. Then came the manned shots of Glenn, Schirra, and Grissom; we knew them, their families, and the little issues (what happens when you wait too long on the launch pad after drinking water). In the Soviet Union information of this sort was a state secret. Who designed the rockets, who the cosmonauts were (before their flights), and the failures were state secrets and mostly unknown until long after the dissolution of the USSR.

NASA has brought us a first-person biographical history of the Soviet space program from one who was there from the earliest times, Boris Chertok. Chertok, whose existence was a state secret until 1990, was Deputy Chief Designer responsible for control systems and a witness to most, if not all, significant engineering and political events of the Soviet space program.

Chertok was sent to Germany immediately after V-E Day to bring German rocket technology to the USSR. In 1948, he was assigned to one of the leading rocket-design bureaus, Korolev. There, Chertok was a significant player in the first Soviet ICBM, the first and all subsequent manned space missions, lunar missions, and missions to Venus.

In this third of four volumes, Chertok takes us from the days immediately following the launch of Sputnik in October 1957 through 1970. He candidly discusses the reasons why Soviet attempts at a lunar landing were not successful, the failures and ultimate success of the Venus probes, and the impact of Yuri Gagarin's death on those in the space program. Chertok lavishly praises the Soviet system and frequently compares Soviet and U.S.

programs—comparisons often unflattering to the U.S. He details the development and launch of Soviet meteorological and communications satellites and tells of the massive launch-pad failure of one of the earliest Moon rockets that killed many including several leaders in the space program. Chertok explains how the two-man Vostok spacecraft was modified for a third cosmonaut simply by stuffing in a third seat. He covers the resulting effect on the riders including the requirement to fly without pressure suits.

An interesting section deals with the decision that led to automatic docking and the trials before achieving success. In the same vein is the discussion of whether cosmonauts would "fly" the space capsules or not and how that led to the death of Vladimir Komarov. Chertok compares the Soviet and American attitudes on whether the rider was a pilot or passenger.

Of special interest are discussions of the Soviet internal decision processes, the personality cults, and the extreme reliance on personal connections. The Soviet military was not enthusiastic about the space program; if it wasn't an ICBM, they weren't interested. However, the military did have to fund the space program; this led to many program difficulties. Interestingly, in a situation eerily similar to the U.S., Khrushchev's ouster in 1964 dealt a serious blow to the Soviet space program, as his successors did not share his enthusiasm for space.

The race for the Moon and near-planetary exploration is also given a close look. Chertok was Chief Designer for the engine control system on the giant N-1 lunar-landing booster. He discusses how lack of quality control, poor management, and the death of Korolev doomed the program from the start. Freely discussed is how a small miscalculation, not so different from the incident involving the US mission to Mars some years later, resulted in a what was an otherwise very successful mission to Venus sailing into deep space.

The book is translated from Russian. Although a comprehensive list of abbreviations is provided, maintaining the connection between factory names and bureaus can be daunting. The volume is heavily footnoted, making references easier; and the extensive index is valuable. Many pictures and diagrams aid the story significantly. Although a tough read, this volume is a must for the space historian.

*MSgt. Al Mongeon, USAF (Ret.), Burke,  
Virginia*



## Allied Strafing in World War II, A Cockpit View of Air to Ground Battle.

By William B. Colgan. London and Jefferson NC: McFarland, 2010. Photographs. Illustrations. Bibliography. Index. Pp. vii, 263. \$ 38.00 Paperback ISBN: 978-0-7864-4887-6

Colgan, an AAF/USAF combat pilot during World War II and Korea, describes in detail the mechanics of strafing or the “Air-to-Ground Battle” as he terms it. The air war of World War II was mostly, and erroneously in the public eye, about strategic bombing. To say that is not to diminish the heroism and courage of the bomber aircrews who flew into German air space in a vain attempt to destroy German war industry and the German will to fight. To question the effectiveness of the execution of the flawed strategic theory they pursued is another matter entirely. As the tonnage of bombs dropped on Germany increased year after year, German war production amazingly increased yearly until finally it fell off a cliff in late 1944.

Next to strategic bombing campaigns in the public eye were the “aces,” fighter pilots who had shot down five enemy aircraft in aerial combat. They were lauded beginning in the First World War and continuing in World War Two and Korea.

But fighter pilots who engaged in trench strafing during World War I had little glory and relatively short lives. The same can be said of fighter-bomber pilots of the Second World War. They went out day after day looking for ground targets: aircraft on air fields, locomotives hauling trains with war supplies, trucks carrying troops or supplies, armored vehicles, staff cars with high-ranking officers, artillery pieces being moved, and the like. They found them, but they also frequently found intense flak, enemy fighter aircraft, or targets that occasionally exploded in their faces. Air-to-ground combat could turn into air-to-air combat in an instant.

Colgan well outlines the history of strafing. He began his career as a strafing pilot in North Africa and transitioned to Italy, France, and Germany. Various chapters describe in detail specific operations in each area. Basically most operations fall into the category of “battlefield interdiction” using guns rather than bombs or other weapons. The primary gun was the 0.50 caliber Browning machine gun with armor-piercing incendiary ammunition. He also deals with strafing experience in Korea and Vietnam.

Strafing has been and remains a doctrinal-free area of endeavor. No one has been able to model it. Air-to-ground gunnery was taught during flight training using ground targets that didn't fight

back. Each squadron or group developed its own tactics but basically left the decision about what tactics to use to judgment. The flight leader had to integrate all the parameters of weather, visibility, terrain, flak, and target value before committing his flight to combat. He also points out that in air-to-ground combat, the ground had a probability of kill of close to 1.0, always to be kept in mind when making low-level passes at 300 mph.

Colgan quotes a narrator's phrase “Every man (pilot) his own general,” true enough and descriptive of the rapid decision making required of each pilot as he hurtled towards a ground target. However, the phrase is repeated too many times. I got it the first three times. That said, the book is excellent. The European phase of World War II ended only when Allied armies reached the west bank of the Elbe River in Germany, and their Soviet counterparts were on the east bank. Both armies succeeded in combined arms fighting against highly professional German foes because of air power, and much of it was invested in air-to-ground combat.

*Capt. John F. O'Connell, USN (Ret.),  
Docent, National Air and Space Museum*



**Wings over the Waves: Fleet Air Arm Strike Leader against Tirpitz: The Biography of Lt Cdr Roy Baker-Falkner DSO DSC RN.** By Graham Roy Drucker. South Yorkshire: Pen and Sword, 2010. Photographs. Glossary. Index. Pp. xi, 388. £25.00 ISBN: 978 1 84884 305 9

This book was a labor of love. Drucker was named for the book's subject, Roy Baker-Falkner but was born a decade after BF, as he was known, was lost on an anti-submarine patrol late in World War II. Drucker wrote this book after his search for information in official records turned up very little information on his highly decorated and very successful uncle. BF was the strike leader for the Fleet Air Arm's (FAA) 1944 strike against the German battleship *Tirpitz*, sister ship to the *Bismarck*. Drucker has written an entertaining and tremendously informative biography. He not only covers BF's life in great detail, but also manages to communicate a picture of life in the Royal Navy prior to and during World War II. His descriptions of Fleet Air Arm operations in and around Norway and the Arctic paint a vivid picture of aspects of the war foreign to many of us.

BF's life is an interesting story, but he was one of many mid-level officers who contributed in their realms to defeating the Axis powers. What makes BF unique and

his story that much more compelling was the impact he had beyond his own actions on tactics and operations. He fought in Swordfish torpedo bombers during the Dunkirk evacuation and Battle of Britain and later in Barracudas leading the attack on the Tirpitz. He also rewrote the Royal Navy torpedo-bomber-reconnaissance tactics manual that was used for years after his death. The men he trained and led remembered him with fondness even sixty years after his death. He was a test pilot, tactician, leader, and selfless example; had he lived, there is no reason to believe he wouldn't have risen to the highest ranks in the Royal Navy. Drucker has succeeded in having his uncle remembered for a great career and promising life.

Drucker used interviews, letters, journals, and diaries from BF and his wife, colleagues, family members, and fellow service members. This extensive firsthand material is seamlessly woven into a thoughtful and entertaining narrative full of the rich detail that brings an historical person to life and adds immeasurably to the book's interest and fullness. Drucker's story moves well beyond a dry recitation of dates and events. He has written articles for aviation magazines and spent countless hours researching his subject but this is his first book. It doesn't show.

My only complaints center on the lack of notes, a bibliography, and maps. Notes would have been useful explaining some things Drucker takes for granted his audience would understand: “up funnel, down screw” is an example of a nautical term used by BF and his contemporaries I had no clue about (it was a routine order issued on early steam warships to furl sails and engage the steam engine and was slang for changing direction). The absence of maps leaves the reader somewhat at a loss to envision key events; without them a military history just doesn't feel complete. There were also some factual errors such as 2,000 airplanes cited as attacking Pearl Harbor versus approximately 200, and Anzio being listed as the first Allied beachhead in Occupied Europe. Closer editing would have caught these. I fault the editing more than Drucker, since he is not a professional historian.

Despite these issues this is a first rate work. I unreservedly recommend it to anyone interested in World War II, naval aviation, operations against the Tirpitz, or just a good story. I thoroughly enjoyed it and hope Drucker decides to turn his talents to further projects—perhaps the Swordfish torpedo bomber or Fleet Air Arm operations in general.

*Lt. Col. Golda Eldridge, USAF (Ret.) Ed.D.*



**Sunderland Over Far Eastern Seas: An RAF Flying Boat Navigator's Story.** By Derek E. Empson. South Yorkshire: Pen and Sword, 2010. Maps. Tables. Diagrams. Illustrations. Photographs. Notes. Appendices. Glossary. Index. Pp. 272. £25.00. ISBN: 978-1-84884-163-5

History is made by people; unfortunately, their memories are perishable. It is always a pleasure, therefore, to read well written reminiscences of someone who participated in past events big and small. Group Captain Empson's account of his service as a Sunderland flying boat navigator in the Far East sixty years ago is typical of a veteran's account of his day-to-day life and work. These accounts often take in the larger events surrounding them but provide a unique glimpse at a world we rarely see through more conventional histories covering larger canvasses. Empson's experience takes in the Korean War, but only peripherally, since the Sunderland's mission was not directly engaged with operations on shore. Rather it provides a fascinating look at the life of a normal RAF officer flying in the early Cold War performing a mission that was soon taken over by more modern, although perhaps less interesting, aircraft.

The book is arranged primarily chronologically, but Empson diverges from this format to discuss events he felt particularly illustrative of flying boat operations. He creates a wonderful picture of the challenges aviators faced a mere 50+ years ago in discussing his crew's 37-day journey taking an airplane from Singapore to the UK with the attendant maintenance and weather issues. This odyssey is something today's newly minted aviators could hardly begin to fathom. Empson was a navigator and naturally spends a good deal of time talking about his duties and procedures. Someone less interested in a flight crew's inner workings might find these discussions tedious (he devotes an entire appendix as well as considerable portions of the text to dead reckoning and other navigational procedures) but, as an aviator and history buff, I was delighted. This sort of flight navigation is a vanishing art, and his descriptions of its intricacies are a testament to the dedication and skill of all who earned the title "navigator." Having flown military reconnaissance missions in many of the same areas and with similar taskings during my Air Force career, I found the contrasts and similarities between different aircraft and time periods intriguing.

Empson was a career RAF officer, but this book covers just his first operational (and only flying boat) assignment. He hopes his memories will help preserve a

unique part of RAF heritage for future generations and be a fitting tribute to his comrades; he succeeds on both counts. Empson is a good writer who presents his material clearly and without ornamentation. Someone looking for lyrical descriptions of flying at wavetop height over the Sea of Japan in a snowstorm should look elsewhere, but his matter-of-fact presentation still paints a vivid picture that helps the reader appreciate the dangers and rewards of the mission.

The book is exceptionally well made with excellent photos, maps, and diagrams that help explain the text. Empson takes the time to explain now arcane flying boat departure and recovery operations that took as much seamanship as airmanship. My only complaint was redundancy of some of his descriptions of activities and procedures. More careful editing might have eliminated these redundancies, but it is a very minor criticism of an otherwise excellent work. The specialized subject isn't for everyone, and the price tag may give some people pause; but for those interested in flying boat operations and a look at life as a young RAF officer in a vanished time, it is worth it. I thoroughly enjoyed it.

*Lt. Col. Golda Eldridge, USAF (Ret.), Ed.D.*



**Fortress Rabaul: The Battle for the Southwest Pacific, January 1942-April 1943.** By Bruce Gamble. Minneapolis, Minn.: Zenith Press, 2010. Maps. Photographs. Notes. Bibliography. Index. Pp. xvii, 398. \$28.00 ISBN: 978-0-7603-2350-2

The author's fourth book on World War II in the southwest Pacific fits neatly between his other efforts: *Darkest Hour: The True Story of Lark Force at Rabaul* describes the resistance offered by Australian troops attempting to repel the Japanese invasion of New Britain; *The Black Sheep* discusses the activities of Marine Corps fighter squadron VMF-214; while *Black Sheep One* examines Greg "Pappy" Boyington's life.

In his preface, Gamble notes that he was attracted to exploring the Allied air assault on Rabaul after he discovered pertinent documents among his late uncle's possessions: John Steinbinder flew forty-three missions as a Boeing B-17 navigator. Besides using the standard secondary sources, he also relied on significant Australian War Memorial documents and translations of Japanese histories in addition to numerous interviews and corre-

spondence with survivors.

Gamble argues the Allied air campaign was the longest sustained attack of World War II, conducted from January 1942 until the Japanese surrender in August 1945. Recognizing that it would be impossible in a single volume to discuss in detail the entire assault on Rabaul, Gamble closed his work with a chapter about the successful interception and killing of Japanese Admiral Isoroku Yamamoto by United States Army Air Force Lockheed P-38 pilots in April 1943. He suggests a succeeding volume may be in the works.

Organized in chronological order, the book focuses on Allied bomber operations—those of the Royal Australian Air Force, United States Army Air Forces' Fifth Air Force, and United States Navy carrier-task-forces—and the Japanese counter punches against bases on New Guinea and the Solomons. Allied fighter operations receive limited mention compared to those of the Japanese.

The emphasis on personalities enhances the book's readability. Prisoners of war and Japanese service personnel describe the bombs falling on Rabaul. Numerous anecdotes recall the experiences of coast watchers and ordinary crew members. Individual chapters are devoted to Medal of Honor winners Edward H. "Butch" O'Hare, Harl Pease, Jr., and Kenneth N. Walker. High-level decision makers also receive considerable attention.

Also commendable is a fine attempt to correlate as much as possible victory claims and bomb-damage assessments with recorded losses and destruction. Both sides repeatedly exaggerated their successes. In some instances, the inaccurate reports misled headquarters and negatively affected future mission planning. I would have preferred that Gamble had used the Allied code names for Japanese aircraft (e.g., Betty, Oscar, Zeke) from the start rather than waiting until the final quarter of the work. That criticism aside, taken as a whole, *Fortress Rabaul* nicely complements Eric Bergerud's more comprehensive treatment of the southwest Pacific air campaign, *Fire in the Sky*.

*Lt. Col. Steven D. Ellis, USAFR (Ret.), docent, Museum of Flight, Seattle*



**Unbroken: A World War II Story of Survival, Resilience, and Redemption.** By Laura Hillenbrand. New York: Random House, 2010. Map. Diagram. Photographs. Notes. Bibliography. Index.

Pp. xviii, 473. \$27.00 ISBN: 978-1-4000-6416-8

With this latest book, Laura Hillenbrand has proven that her number one *New York Times* bestseller, *Seabiscuit*, was no fluke. She is an absolutely amazing author who can tackle a subject about which she knew nothing when she started seven years before and then weaves words into pictures that bring the reader directly into the scene.

This work is the story of one of the most amazing characters of World War II. Hillenbrand presents to her readers the life story of Louis Zamperini, with no punches pulled. To say that young Louis was a “wild child” would be a gross understatement. What finally turned this young lad’s life around was running. He broke many high-school and college running records in the 1930s, met Hitler personally as a member of the 1936 U.S. Olympic team in Berlin, and was felt by many to be the man who would finally break the 4:00-mile barrier.

But this was not to be, as World War II intervened. Zamperini signed up with the USAAF and became a bombardier. Winding up in B-24s, he was assigned to a group in the Seventh Air Force. Many readers have probably never heard of this USAAF command, but it was the one that bombed all of the distant targets for Admiral Nimitz’s thrust in the Central Pacific. Just to have this portrayal of what life and operations were like in the Seventh in the early stages of the war makes this book worthwhile. On a search mission for another B-24 that had gone down in the vast reaches of the Pacific, Zamperini’s airplane was lost with only three of the crew surviving the crash. Hillenbrand’s recounting of the story of what is still a record—forty-seven days at sea in what was left of two two-man life rafts—is something to rival Nordhoff and Hall’s tale of Captain Bligh’s epic voyage after the mutiny on the *Bounty* mutiny, *Men against the Sea*. Unfortunately, he and his pilot (the third crewman died) were captured by the Japanese, thus beginning a two-year experience of Hell on Earth.

Imprisoned on Kwajalein and then taken by ship to Japan where he stayed in three camps on Honshu, Zamperini endured what, to most of us, is almost unimaginable horror. I’ve read a number of first- and second-person accounts of life under the Japanese in their prison camps and was quite familiar with what men have been able to figure out to do to their fellow men. But Hillenbrand’s word pictures of Zamperini’s life under one particularly evil guard, named The Bird by the

prisoners, had my stomach in knots. Somehow, Zamperini and many fellow prisoners (including his pilot) endured and survived this inhuman treatment and lived to see the end of the war and repatriation to the United States.

The book concludes in two tracks: one, Zamperini’s readjustment that included alcoholism, fame, family distress, eventual reconciliation with God through the vehicle of Billy Graham, and an inspirational path that continues in California today; and two, the hunt for The Bird in Japan. I found all of this as gripping as the war stories.

There is supposed to be a movie in production on Zamperini that will star Nicolas Cage. If he does half the job Hillenbrand has done, it will be a fantastic movie. I borrowed a copy of the book from a friend; I’m going to buy my own copy for my library. You will want to have one as well.

*Col. Scott A. Willey, USAF (Ret.), Book Review Editor, and Docent, NASM’s Udvar-Hazy Center*



**303 (Polish) Squadron: Battle of Britain Diary.** By Richard King. Walton-on-Thames, UK: Red Kite, 2010. Photographs. Bibliography. Index. Appendices. Pp.354. \$46.57 ISBN: 978-1-906592-03-5

It is timely that the seventieth anniversary of the Battle of Britain saw the publication of a history dedicated to the most successful squadron in the Battle. King gives a chronology of 303 (Polish) Squadron’s combat operations but also the complex saga of how the Poles arrived in the United Kingdom.

As a result of the German and Soviet invasions of Poland in September 1939, Polish Air Force combat and support facilities close to Romania were ordered to cross the border. Initially interned by the Romanians, a very efficient clandestine escape was implemented; and the Polish Air Force began to be reformed in France and the UK. French capitulation in June 1940 led to evacuation of all Poles in France. Polish fighter pilots who had fought in the French Campaign were congregated in two all-Polish squadrons. This influx of foreign, non-English-speaking personnel, presented the British with a major challenge, to say nothing about endemic British xenophobic distrust of central Europeans.

The situation was normalized by the Polish-British Agreement of August 1940, respecting the Polish Forces in the UK. However, it was not legalistic agreements

that mitigated attitudes and prejudices but the outstanding performance of the two Polish fighter squadrons and their nearly eighty pilots, in particular the 303 *Kosciuszko* Squadron.

King tells the story of their first air engagement on August 31, 1940, and the unbelievable air successes they achieved during the Battle. In six weeks, *Kosciuszko* Squadron was credited with 126 enemy planes destroyed for the loss of only six pilots. After the Battle was won, the RAF instituted administrative changes and formed eight Polish fighter squadrons by spring 1941 as Polish pilots transferred from RAF units to Polish squadrons.

Many explanations have been offered for the Polish success, but these facts are beyond dispute: the Poles were better trained, older, and more experienced, having fought in Poland and again in France. King also credibly posits that establishment of the 303 Squadron with just over thirty pilots—much larger than the depleted RAF squadrons—allowed a better rotation and more rest between combat operations. It is also worth noting that well over 100 Polish pilots who fought in the Battle were graduates of the Polish Air Force Academy in Dèblin, and many had gone through the fighter training center at Ulez. To clinch the issue, in April 1942, RAF Fighter Group 11 organized an aerial gunnery contest. The winners were 303 *Kosciuszko* Squadron, with 316 (*Warszawski*) and 315 (*Dèblinski*) Squadrons coming in second and third respectively.

Aviation aficionados will find comprehensive information about the specific planes which came on line and what happened to them. The only regret I have is omission of the American origins of the squadron. It harks back to the American volunteers who came to help Poland in 1919 in its fight against the Russians. They gave it the name and the crest with the American Red, white and blue colors. The current *Kosciuszko* Squadron is part of NATO and continues the legacy.

King gives due attention to the many hundreds of excellently trained pre-war Polish ground crews who looked after their pilots and without whom no operation could be successful.

This is a very well produced and elegant book.

*Michael Alfred Peszke, MD, MA*



**Predator: the Remote-Control Air War Over Iraq and Afghanistan: A Pilot’s Story.** By Matt J. Martin and Charles W. Sasser. Minneapolis, Minn.:

Zenith Press, 2010. Photographs. Pp. 310. \$28.00 ISBN:978-0-7603-3896-4

*Predator* is a first-person combat narrative. Like similar works within the genre, it is resplendent with jingoism and jargon. The colorful language and turn of phrase may accurately reflect the banter between men and women engaged in combat against a deadly foe; but on the written page, it sometimes feels contrived or even forced. The story reflects the thoughts, opinions, and reasoning of a self-described soldier-scholar engaged in combat with an enemy whom he, over time, begins to dehumanize, perhaps as a coping mechanism common to those required to kill in war.

The Predator, a remotely piloted aircraft, provides combat commanders in Iraq and Afghanistan with a long-endurance, medium-altitude reconnaissance and surveillance asset. The aircraft's full-motion video feeds help improve ground commanders' situational awareness giving a bird's-eye view of what is over the next hill, around the next bend, or within a target compound. The aircraft, and the men and women who fly it or operate its sensors, has saved the lives of coalition soldiers, while reducing civilian casualties and collateral damage through positive target identification.

Martin begins his story as "the fighter pilot who never was"—an RC-135 navigator. Feeling he was not contributing enough in the Global War on Terror, he volunteered for Predator duty as a way to get closer to the fight. *Predator* is a story of combat from a distance. Distance does not lessen consequences for the combatants, however. Martin struggles with the same moral and ethical dilemmas common to warriors faced with the reality of what they do. Some find it easier to rationalize or justify the killing of enemy combatants than others. Most remain haunted by the deaths of innocents, collateral damage, and unintended consequences of their actions. Martin is no exception.

Those fighting war at a distance face unique disorienting challenges. Predator pilots might fly a mission during their shift, engaging and killing enemy combatants, and follow it with a quick stop on the way home to pick up milk for dinner. Lt Col Martin describes it as living a schizophrenic existence between two worlds.

As the story unfolds, Martin bares himself for our inspection, holding little back. Over the course of hundreds of combat missions, he became frustrated with what he describes as "stove piping" in the decision-making process that sometimes prevented friendly forces from eliminating enemy combatants. His criticism of the

process ultimately had a detrimental impact on his career. Undaunted, he persevered and successfully pursued new and innovative ways to employ the Predator in Iraq and Afghanistan.

More specific and general dates would have helped readers orient themselves in the narrative, although their omission may be intentional in an attempt to allow the reader to experience vicariously the disorientation Predator pilots sometimes feel. Additionally, the inclusion of references and sources for specific events and quotes would have added another level of credibility to the story. A publisher's note on the front piece explains typographical errors found in the narrative (not Martin's fault), but this does not prevent them from being a distraction. *Predator* is a readable account of one airman's experiences in war at a distance and is as accurate as memory and ego will allow.

*Chris M. Mayse, USAF Historian, Bolling AFB, Washington, D.C.*



**Secrets of the Cold War: US Army Europe's Intelligence and Counterintelligence Activities Against the Soviets During the Cold War.** By Leland C. McCaslin. Solihull UK: Helion & Co, 2010. Maps. Photographs. Appendices. Pp. v, 199. \$39.95 ISBN: 978-1-906033-91-0

After serving four years as an Army intelligence officer in the United States, McCaslin spent the rest of his career specializing in security and intelligence as a government civilian employee. From 1979 to 1995, he worked for U.S. Army Europe (USAREUR). Understandably, the accounts described in this book focus on the 1980s. Besides including personal experiences, he sought out stories from Allied personnel, some of whom preceded his time in theater.

After World War II ended, the Allied powers, including the Soviet Union, divided Germany into four sectors—the British sector in the northwest, the American sector in the midwest, the French sector in the southwest, and the Soviet sector in the east. The Soviet sector surrounded what had been the German capital of Berlin. Berlin, in turn, was divided into similar sectors with the Allies controlling the west and the Soviets the east. This state of affairs remained in place for more than forty years until the collapse of the Soviet-dominated Warsaw Pact at the end of 1989.

Even though the Soviets tried to limit East Germany's exposure to the west, the Allies still had "eyes on the ground" in the form of the Allied Military Liaison

Missions Potsdam, a result of a post-World War II agreement. Much of the book deals with the experiences of individual American, British, and French personnel observing Soviet military activities in East Germany. They were expected to penetrate off-limit Soviet training areas frequently for the purpose of obtaining high-resolution photography of the latest military equipment. The book discusses in considerable detail the circumstances surrounding the death of American Major Arthur D. Nicholson, shot by a Soviet sentry in 1985. Readers unfamiliar with the Potsdam outpost's operations should find interesting the discussion of the special modifications made to the organization's vehicles.

Perceptions of individual Soviets are, for the most part, omitted. One exception concerns the chapter dealing with the operation of the regular passenger train service between West Berlin and West Germany. Train commanders were required to provide the Soviets with documentation concerning the passengers. This transfer of paperwork allowed the American personnel to interact with the Soviets on a somewhat personal basis.

McCaslin also examines the activities of several of the better known anti-U.S. terrorist groups operating in Western Europe in the 1980s. The kidnapping in Italy of Maj. Gen. James Dozier and the attempt to assassinate USAREUR commander Gen. Frederick Kroesen are recalled.

Primarily a personal reminiscence of Army intelligence in Germany in the 1980s, this work most likely will interest individuals who can relate to the persons and events described based on their own involvement.

*Lt. Col. Steven D. Ellis, USAFR (Ret.), docent, Museum of Flight, Seattle*



**The Berlin Raids: The Bomber Battle, Winter 1943-1944.** By Martin Middlebrook. Barnsley, UK: Pen & Sword, 2010. Maps. Diagrams. Photographs. Appendices. Bibliography. Index. Pp. 407. £25.00. ISBN: 1848842244

This reprint makes available again one of the best works on the RAF's campaign of destruction over the Nazi German capital during the year in which the fortunes of World War II tilted decisively to the Allies' advantage. From August 1943 to March 1944, the RAF attacked Berlin with over 10,000 bomber sorties, dropping more than 30,000 tons of bombs. RAF officers dubbed the campaign "the Battle of Berlin," in ironic reference to the Nazis'

attacks on London earlier in the war. But would the British succeed where their enemies had failed? Could RAF efforts cripple the enemy capital when German efforts to do the same to them had failed?

In his opening chapters, Middlebrook wisely contextualizes this bombing campaign as an important practical test of the theoretical debates concerning airpower's potential as an independent agent of war. Ever since the 1918 armistice, air power's partisans had increasingly trumpeted its vast range, speed, and flexibility, which they claimed would allow a nation to ignore the enemy's military and instead directly break its industrial, political, economic, and moral centers of resistance. The idea horrified many political and even military leaders and was against most stated national policies until the German destruction of Rotterdam in May 1940. This event began a series of escalations, and opened mental space on all sides for bombing partisans to test their theories. Sir Arthur Harris, the Air Marshal in charge of RAF Bomber Command, eventually promised Churchill that, at the cost of 400-500 planes, he could knock Germany out of the war by incinerating its cities.

Middlebrook benefited from having already written a series of related works. Two such monographs, *The Battle of Hamburg* and *The Peenemunde Raid*, describe particularly important precursors to later bombing campaigns. After all, at Hamburg in July 1943, the RAF proved it could largely annihilate Germany's second greatest city in less than two weeks. Middlebrook's grounding in this earlier history allowed him to account for the development, conduct, tactics, and innovations on display in the RAF's campaign over Berlin.

Most importantly, Middlebrook addresses head on the campaign's ironies. Harris claimed that his bombers could cripple all major German cities and economic centers by the summer of 1944, thus forcing a military collapse, a domestic revolt, and a German surrender without the need for the massive ground invasion then being planned at great risk. But if any nation should have understood the resiliency of a European people in this era to resist the morale effects of aerial bombardment, it should have been the British. If they had not surrendered during the Battle of Britain, why should the Germans surrender to British bombs? The British also saw—or should have seen—how quickly Hamburg had already recovered from their earlier assault. Additionally, Allied air policy by 1943 clearly stressed attacks on the Luftwaffe itself in order to gain air supremacy and enable future operations against strategic targets.

Bomber Command's attacks on Berlin, therefore, took place with a somewhat reduced set of expectations.

Narratively, Middlebrook organizes his work around lunar months—a canny choice that emphasizes the contingent nature of air operations, especially at this time. Night bombing had to function according to lunar rhythms, and could not be forced into man-made calendars. Each chapter details the major attacks of that phase of conflict and includes details concerning the number and type of craft, time over target, tons of bombs released, and RAF casualties. Useful maps for each major operation lay out the main bomber routes, diversionary raids, and, in some cases, locations of casualties. The narrative proceeds with liberal use of diaries, letters, and interviews from RAF and German participants. The story thus gains a direct, emotional, and exciting tone that continues into a final chapter on “experiences” from many different perspectives on the battle. Several appendices round out the presentation with more details concerning the order of battle on both sides, and a section of photographs includes reproductions of better quality than in some previous editions of this work. Generally, this volume's high production values justify its higher price compared to paperback reprints.

Middlebrook never attended college or trained as an historian. But he has secured for himself a place among the most thorough and readable recent historians of the Second World War's air aspects. Readers who had not previously been exposed to his work will therefore find this reprint worth their time and consideration.

*Dr. Andrew Wackerfuss, PALACE ACQUIRE Intern, Air Force Historical Studies Office (AFHSO), Joint Base Anacostia-Bolling, Washington, D.C.*



**Hitler's Secret Weapons, 1933-1945: The Essential Facts and Figures for Germany's Secret Weapons Programme.** By David Porter. London: Amber Books, 2010. Photographs. Illustrations. Maps. Appendices. Glossary. Bibliography. Index. Pp. 192. \$34.95 ISBN: 978-1-906626-75-4

Porter states that he examines every aspect the weapons development program in which Hitler believed the resulting “miracle weapons” would win the war. The considerable strengths of the author and his editors are demonstrated by the large amount of cogent data presented in a

well-organized, prioritized, and accurate fashion. Not only successes such as the Me 262, but also the many failed weapons developments are covered. The latter are described in the right amount of detail and often finely illustrated along with the many reasons for the failures—among them engineering and technical factors, operational and financial problems, or simply bad judgments. Additionally, statistics show that Germany could not have found and trained enough operators even if the systems, once fielded, became effective.

The first five chapters describe the extensive work in surface weapons, to include several innovative infantry anti-tank and anti-aircraft weapons and very large artillery pieces. The book contains illustrations as well as unit and equipment charts for the many models and variants of the tank and its armaments. Many data on naval armaments are also given, especially for the very successful Type XXI submarine, including four pages of charts of their battle records. This boat was designed so that it could be built in 171 days instead of 18 months.

The capabilities of civilian industry, which was totally reportable to the Nazi state, are constantly cited. For instance, BMW led the way in axial flow, turbojet engine development. Porche not only built the VW that started out as a Wehrmacht utility vehicle, but early on was a major competitor with Henschel and others for tanks and their equipment.

Chapters 6 through 8 and the appendix cover most of the airborne weapons. Had a ship-launched V-1, the A-9/A-10 ICBM, or the Amerika bomber come in along with a successful nuclear weapon, history might have been much darker. Interestingly, Porter clearly thinks at least a partially matured nuclear threat deserves more credit than the consensus allows.

The Germans had several surface-to-air missile systems in design and development. One of the most promising, the Hs 117 Smetterling, was flight tested in May of 1944. Porter's handling of this unfielded system is weak. He implies capabilities and effectiveness equal to the SA-2 *Guideline* system and Raytheon's Hawk in the hands of the IAF during the Yom Kippur War. Whether the numbers given came from documents he used or conclusions he separately arrived at is not clear. The unsupported numbers given need to be explained to be credible.

The most successful secret weapons development by the Germans were the air-launched guided glide bombs such as the Fritz X and Hs293 which, in the late summer of 1943, sank or severely dam-

aged five Allied and Italian capital ships and several merchant ships.

The chapter on chemical and nuclear weapons is a must read for everyone, not just military engineers and operators. The third Reich went into full production of chemical weapons but Hitler, himself, prohibited their first use.

Porter spent his career in the British Ministry of Defense. He carefully arranged and checked his facts to present a coherent, fact-filled, myth-busting, and well-proportioned history of warfare-related technological development. He uses appropriate tables, anecdotal insets, drawings, and pictures to illustrate his points. He avoids a personal agenda and does not push his own issues. His annotated bibliography is a vital reference work for a broad range of historians and those interested in his subject.

This book will not be given the highest marks in either military or technology history circles because of its coffee-table format. It shares characteristics with Stephan Bungay's *The Most Dangerous Enemy* that covers far less territory and has less current application. The subject of Hitler's weapons is not only masked in the clouds of a war, but the uncertainties of emerging science and lost records. David Porter and Amber Books have done very well.

Col. Jerry Hoblit, USAF (Ret.), Willis, Texas



**Stalking The U-Boat: U.S. Naval Aviation In Europe During World War I.** By Geoffrey L. Rossano. Gainesville: University Press of Florida, 2010. Photographs. Bibliography. Notes. Appendices. Index. Pp. xviii, 429. \$85.00 ISBN: 978-0-8130-3488-1

Rossano has written a richly detailed account of U.S. naval aviation's sudden and painful introduction to antisubmarine warfare from April 1917 to the end of World War I. It is a skillfully researched story of Naval aviation in combat for the first time that is likely to be the final word on the subject.

In June 1917, the Navy's newly created First Aeronautic Detachment arrived in France, commanded by Naval Aviator 16, Lt. Kenneth Whiting. That he had vague directions and no airplanes did not faze him. This sets the theme for Rossano's narrative: junior officers in command with never enough airplanes and only limited resources, creating their own operating bases, and training their people.

The book is structured around the

rapid establishment of Naval air stations for seaplanes in France, England, Ireland, and Italy (eventually twenty-seven, although a few were never completed). It covers evolution of the command structure (and attendant intramural conflict), and enormous construction program. The aircraft acquisition effort resulted in fourteen types in operation, built in France, England, Italy, and the U.S. Most were delivered as kits and assembled by the sailors.

On July 20, 1917, Whiting sent the Secretary of the Navy an aggressive plan for establishing an array of air stations in France. By September 16, fourteen were authorized to be built from scratch. Later air stations were established in England and Ireland. The Naval air station at Killingholme, England, was unique: an existing first-rate facility provided by the RAF. Staffed by 1400, with forty-six seaplanes, it was the largest but achieved only 404 flights before war's end. At Italian request, an air station started operations in July, 1918, at Porto Corsini with seventeen seaplanes and 380 officers and men.

The last major initiative covered is establishment of the Northern Bombing Group in northern France to carry out day and night bombing of German U-boat facilities. A fleet of 160 3-engine bombers was ordered from the Italian firm Caproni. No missions were ever flown due to technical problems, schedule slips, and the loss of several aviators trying to fly over the Alps to northern France. This was a very frustrating Navy failure in the last year of the war.

At its core, this book is about a fine group of aggressive Naval officers who made all of this happen rapidly. Rossano includes numerous thumbnail biographies. Examples include Captain Hutch Cone, who took command of Naval aviation in Europe in September 1917 and led the way to a 20,000 man organization in 1918; mustang Lt. Comdr. John Callan, former civilian instructor pilot who quickly organized many air stations; Ensign Robert Lovett, USNR, who ended the war as a high-visibility lieutenant commander. (and was Secretary of Defense 1950-1953). The most publicly visible pilot was Ensign David "Crock" Ingalls, USNR, the only Navy ace of the war. The flamboyant and hard-living Ingalls flew on loan to the RAF's 213 Sq, achieving five kills.

The book well captures eighteen months of intense activity focused on neutralizing the German U-boat threat to allied ships in European waters. Rossano does not attempt to quantify U.S. Naval aviation's contribution to defeating or neutralizing the threat. Rather, he lucidly describes the extraordinary efforts it took

to build bases; buy airplanes; train green personnel; assemble kitted airplanes; and work with French, English, and Italians. For anyone interested in the early days of Naval aviation, this is an essential book that I found fascinating.

Sherman N. Mullin, retired President, Lockheed Skunk Works



**Kept in the Dark: The Denial to Bomber Command of Vital ULTRA and Other Intelligence Information during World War II.** By John Stubbington. South Yorkshire: Pen and Sword, 2010. Photographs. Appendices. Glossary. Bibliography. Index. Notes. Pp. 446. \$36.50 ISBN: 978-1-84884-183-3

Stubbington's book is a detailed analysis of the Allied strategic bombing offensive against Germany during World War II, both by the U.S. Eighth Air Force's daylight precision bombing against industrial targets and Royal Air Force Bomber Command's night area bombing of city targets.

As many have discovered, American *precision* bombing was not as precise as claimed early on, with evidence showing that just 40 percent of bombs landing within three miles of the intended bomb impact point. Despite this, Stubbington proves that the Allied strategic bombing of the German heartland contributed vastly to ultimate victory. Agreeing that oil was essential to the German military but not to the war industry, Stubbington concludes that the real damage to Germany's capacity to wage war was the strategic bombing campaign against the transportation system, especially railways and canals, causing the Reich's inability to move raw materials and finished products.

Stubbington explains both how ULTRA was applied to the planning, implementation, and assessment of the bombing campaigns and the ways in which some of the output from Bletchley Park Air Section was used to support strategic bombing operations. This information formed the basis of *Kept in the Dark* by looking at various dimensional usages of intelligence during World War II. Stubbington argued that within the overall planning and targeting of the bomber offensive, there were several power groups within Whitehall, each with its own ambitions and objectives, that were not entirely focused "exclusively on the primary task of securing victory." He also states that it was not until the later few months of the war when British political thinking changed that maybe they came to regret their per-

sonal association with “acrimony, decisions, and the bombing directives.” Whatever the reasoning was, Whitehall kept to the minimum the number of ENIGMA decrypts sent down to senior field commanders. Churchill was adamant about restricting information to the fewest recipients as possible for fear of revealing to the Germans the major source of Allied intelligence.

*Kept in the Dark* is a very detail-oriented work looking at intelligence sources provided to, and used by, Eighth Air Force and RAF Bomber Command. At times, Stubbington’s writing style is awkward and difficult to follow and led me to set the book down to refocus. However, if one is looking for details on intelligence sources generated and used during World War II, then this work will suffice. However, if you are looking for a work on air intelligence during World War II, I’d suggest Col. Robert Ehlers work, *Targeting the Third Reich: Air Intelligence and the Allied Bombing Campaign*, to bridge the gap.

R. Ray Ortensie, *Command Curator, Headquarters Air Materiel Command*



**Dangerous Games: Faces, Incidents and Casualties of the Cold War.** By James E. Wise, Jr. and Scott Baron. Annapolis, Md.; Naval Institute Press, 2010. Photographs. Notes. Appendices. Bibliography. Index. Pp. xiv, 241. \$34.95 ISBN: 978-1-59114-968-2

“The Cold War was only cold in that the two major powers, the United States and the Soviet Union, did not engage in a nuclear war,” but several conflicts brought both sides to the brink. This left much time for proxy wars, spying, aircraft shoot-downs, kidnappings, murders, defections, and “races” into space. For those of us who came of age during the Cold War, our sense of history is punctuated by terms like the Marshall Plan, Iron Curtain, the Truman Doctrine, Berlin Blockade, Cuban Missile Crisis, the Berlin Wall, McCarthyism, fallout shelters, and Mutual Assured Destruction. *Dangerous Games* is the story of some of the men and women who fought the Cold War and whose sacrifices and valor went unrecognized. As historians grapple with the Cold War from a distance of two decades, there is a new awareness and appreciation of the service and sacrifices of these Cold Warriors.

Nineteen short chapters introduce readers to a cast of characters such as Lt. Gail Halvorsen, the Berlin airlift “candy bomber”; U.S. Navy Captain Eugene S. Karpe, murdered on the Orient Express;

Hans Conrad Schumann, the East German border guard who leaped to freedom in the West and took his own life two decades later; U.S. Army Captain Bert K. Mizusawa who died in a hail of gunfire at Panmunjon Korea thirty years after an armistice agreement; and U-2 pilot Major Rudolph Anderson who lost his life during the Cuban Missile Crisis. Cold War first blood was drawn in December 1945 when U.S. Marines found themselves thrust into the middle of a civil war between Chinese Nationalists and Communist factions who had been fighting since 1927; the “proxy wars” in Korea and Vietnam took nearly 100,000 U.S. lives and the lives of countless Koreans, Chinese and Vietnamese.

In the contest to best one another, the U.S. and the Soviet Union used spies like Elizabeth Bentley, the American-born “Red Spy Queen”, who became disaffected with her country during her experiences at Vassar and in depression-era New York City. Defectors from the other side were attracted by offers of sanctuary and money in exchange for a new Soviet-designed MiG-15. This began an “American life” for Florida engineer Kenneth Rowe, who responded to Operation Moolah as Senior Lieutenant No Kum-Sok in 1953. Kidnapping was another technique that was demonstrated by the twenty-year false imprisonment of two CIA operatives in China and the seizing of the *USS Pueblo* and her crew for nearly a year. Finally, the book tells the rest of the story behind Yuri Gagarin, the first man in space in 1961. He died in the crash of a MiG-17 aircraft in 1968. Rumors surfaced that he was piloting the aircraft while drunk and had only amassed ninety flying hours in the previous decade.

*Dangerous Games* concludes with two appendices outlining the Cold War aircraft shoot-down incidents (nearly 250), exclusive of the war losses in Korea and Vietnam, between 1945 and 1990 and the nearly 50 US Navy aircraft carrier incidents during the same time. The authors are former Cold Warriors themselves. James Wise Jr. is a former Naval aviator and intelligence officer and Scott Baron is a U.S. Army Vietnam veteran. Their research is well-documented in chapter notes. Their book is an interesting read that reminds readers that the Cold War was a world-wide conflict spanning nearly a half century and touching the lives of millions.

Gary Lester, Ph.D., *Historian, Air Force Operational Test and Evaluation Center*



**Cataclysm: General Hap Arnold and the Defeat of Japan.** By Herman S. Wolk. Denton: University of North Texas Press, 2010. Photographs. Chronology. Endnotes. Glossary. Bibliography. Index. Pp. xii, 300. \$24.95. ISBN: 978-1-57441-281-9

There have been many books concerning the Boeing B-29 and “Hap” Arnold; yet there has not been a work that binds these two subjects together within the mindset of Arnold. Wolk focuses *Cataclysm* on grand strategy—the strategy at the highest level of decision-making. In attempting to get inside Arnold’s mind, especially in the context of planning the defeat of Japan, the book emphasizes connections among doctrine, organization, and command.

Wolk set out to answer specific questions: Was it necessary to drop the atomic bomb on Japan? After the atomic attack on Hiroshima, was it necessary to drop the atomic bomb on Nagasaki? What was President Truman’s rationale? Did he preemptively attempt to deliver a message to the Soviet Union as some historians have charged? Should the United States have warned Japan specifically about the bomb before using it or actually conducted a demonstration of the new weapon before employing it? In the spring of 1945, was it absolutely necessary to ditch high-altitude precision bombing against the Japanese home islands in favor of area incendiary attacks? Was Hap Arnold the reluctant warrior when he established the Twentieth Air Force? Why was unified command never established in the Pacific? At the highest level of the Army Air Forces’ leadership, did serious concern exist over civilian casualties in the bombing of cities? Wolk answers these questions in seven well-written, thought-provoking chapters.

Starting with Arnold himself, Wolk looks at influences on his career: the strategic bombing campaign in World War I; Air Corps Tactical School Employment of Combined Air Forces; Douhet’s beliefs; and, the greatest influence, Billy Mitchell—confidence in technology, belief in publicity, and faith in unified air power. In May 1939, Arnold established a board to recommend future development and procurement programs. Two months later, its report outlined various aircraft and equipment to procure by 1944, including a very long-range (VLR) heavy bomber—the future B-29. President Roosevelt remarked that he knew “no single item of our defense today that is more important than a large four-engine bomber capacity.”

Chief to mainland Japan bombing strategy was a bomber that could reach it. On November 10, 1939, two months after

Germany's invasion of Poland, Arnold initiated the VLR project to develop a four-engine bomber superior in range, speed, and bomb load to the B-17 and B-24. Arnold wrote that the B-29 was the "only weapon with which the Army Air Forces could hope to exert pressure against Japan without long and costly preliminary operations."

The B-29 Superfortress became Arnold's life. From production issues to commanders in the field demanding its presence, to the President's inquiries, Arnold worked tirelessly to get the B-29 operational. As Arnold worked aircraft issues, President Roosevelt began working staging issues. At the Teheran Conference in November 1943, he pulsed Stalin on the possibility of basing heavy bombers at airfields around Vladivostok. That month, he also asked Chiang Kai-shek to build five B-29 fields in the Chengtu, China, area by March 1944.

Arnold, meanwhile, fought hard to keep B-29s from being diverted for tactical missions in the Pacific which he felt "violated basic air power principles" and would scatter the assets. He believed in massing the maximum number of B-29s to destroy Japan in "the Battle of Japan." He won out against the theater commanders and commanded the Twentieth Air Force.

After the new President Truman had his first cabinet meeting, Secretary of War Stimson informed him of an important matter: a project to develop a new bomb of almost unbelievable destructive power. This was the first time Truman had heard of the atomic bomb. A few months later, while Truman was attending Potsdam, the weapon was successfully tested.

The next to last chapter, "Arnold, Potsdam, and the Atomic Bomb," is by far the *crème de la crème* of *Cataclysm* as the reader is transported to the summer of 1945 and discussions on deployment and target selection for the atomic bombs, U.S. Strategic Bombing Survey recommendations, continuation of incendiary attacks, and mining operations of mainland Japan.

Arnold was surprised by Japan's sudden surrender following the atomic bombing, as he had been focused on redeploying assets from Europe to the Pacific. He believed that more atomic bombs or a ramping up of the incendiary campaign by more bombers would be needed. In his

view, the atomic bomb had provided "a way out" as the Japanese had "lost control of their air."

Arnold was a "doer, a fixer, a driver." Impatient and a man who waited for no one, he was also a visionary who had the ability to recognize what had to be "done to build, organize, and control air forces." So much a visionary, Arnold asked Theodore von Karman to investigate what aerial warfare would look like in the future. The resulting report, *Toward New Horizons*, stressed the importance of science and technology in the evolution of air power. Arnold said, "if we fail to keep not merely abreast, but ahead of, technological development, we needn't bother to train any force and we needn't make plans for an emergency expansion: we will be totally defeated before any expansion could take place."

*Cataclysm* is a must read for anyone interested in one of the great aviation pioneers of our great U.S. Air Force.

*R. Ray Ortensie, Command Curator,  
Headquarters Air Materiel Command*



**Robert Taylor's Battle of Britain, Commemorative Collection.** By Robert Taylor. Havertown, Pa.: Casemate, 2010. Illustrations. Photographs. Index. Pp. 128. \$34.95 ISBN: 1-935149-32-3

Anyone interested in aviation combat art and the Battle of Britain could not do better than get this elegant and inspiring volume—a coffee-table-style book that is not just a visual treat! Not only is Robert Taylor an outstanding artist, but his text also ties this set of his stunning drawings and paintings together with real stories. The book recreates the feeling of action and urgency of the Battle as seen by the air crews. Taylor's interviews with both British and German pilots take us back to this critical turning point in world history. His expert writing and art illuminate the day-to-day life-and-death combat action in the Battle of Britain.

After leaving art school, Taylor spent thirteen years as a professional painting restorer observing and learning to recreate the work of many great artists. Building on this expertise, he teamed with The Military Gallery as a full-time original

artist. He is currently recognized as one of the world's leading aviation artists. His 1987 art show at the National Air and Space Museum in Washington, D.C. was viewed by over 10 million people. His more recent paintings and limited edition prints confirm his master touch.

This book covers the Battle of Britain from start to finish. It includes the escape from Dunkirk, Channel battles, German assaults on the coastal airfields, targeting of the RAF, and eventual morphing of the battle into German bombing raids on British cities. About 50 of Taylor's master artworks are featured. Many show the thrilling aerial battles, but they are complemented with images and views of the aircraft and crews in the air and on the ground. An important dimension is that it tells the story through the eyes of the participants on both sides. There are many sidebars about key pilots of both sides who flew in these battles. Included are Sir Douglas Bader, Tom Dalton-Morgan, Air Vice Marshal "Johnnie" Johnson, Group Captain Peter Townsend, Johannes "Macky" Steinhoff, Air Commodore Alan Deere, General Adolf Galland, and General Gunther Rall. As each painting and drawing is presented, Taylor describes how he researched the topic and developed the artwork.

It is difficult to think of any other early battle in World War II that had such a significant effect on history. Winston Churchill himself told Parliament during the battle that "Never in the field of human conflict was so much owed by so many to so few." The consequences of a British win in this battle made it possible for the huge allied buildup in Great Britain that resulted in the Normandy invasion that began the end of the war.

This book is printed on high-quality paper—appropriate for the superb drawings, paintings, and photos. The only minor omission is that it does not include a dust jacket. The price is a good investment for any person seriously interested in the Battle of Britain. You will read it once for an overall picture then delve back into it many times to re-experience its images and historic descriptions.

*Lt. Col. Rodney L. Wright, USAF (Ret.),  
NASM Docent*



# Books Received

Boyne, Walter J. *How the Helicopter Changed Modern Warfare*. Graetna, La.: Pelican Publishing Co., 2011. Appendix. Notes. Photographs. Index. Pp. 352. \$29.95 ISBN: 978-1-5898-0700-6

Bruning, John R. *Bombs Away! The World War II Bombing Campaigns over Europe*. Minneapolis, Minn.: Zenith Press, 2011. Maps. Notes. Notes. Appendices. Bibliography. Index . Pp. 292. \$50.00 ISBN: 978-0-76

Copp, Terry and Mark Osborne Humphries. *Combat Stress in the 20th Century: The Commonwealth Perspective*. Kingston, Ontario: Canadian Defence Academy Press, 2010. Notes. Appendices. Bibliography. Glossary. Index. Pp. xiii, 595. Paperback ISBN: 978-1-100-12726-2

Dorr, Robert F. *Mission to Berlin: The American Airmen Who Struck the Heart of Hitler's Reich*. Minneapolis, Minn.: Zenith Press, 2011. Maps. Notes. Notes. Appendices. Bibliography. Index . Pp. 328. \$28,00 ISBN: 978-0-7603-3898-8

Dubbs, Chris and Emiline Paat-Dahlstrom. *Realizing Tomorrow: The Path to Private Spaceflight*. Lincoln and London: University of Nebraska Press, 2011. [Outward Odyssey: A People's History of Spaceflight. Colin Burgess, Series Editor] Photographs. Bibliography. Index. Pp. xiii, 309. \$34.95 ISBN: 978-0-8032-1610-5

\* Lacey, Jim. *Keep From All Thoughtful Men: How U.S. Economists Won World War II*. Annapolis, Md.: U.S. Naval Institute Press, 2011. Notes. Appendices. Bibliography. Index. \$34.00 ISBN: 978-1-5911-4481-5

Olsen, John Andreas. *Global Air Power*. Washington, D.C.: Potomac Books, 2011. Notes. Appendices. Bibliography. Index. Pp. ix, 539. \$55.00 ISBN: 978-1-59797-555-1

Plating, John D. *The Hump: America's Strategy for Keeping China in World War II*. College Station: Texas A&M University Press, 2011. Maps. Photographs. Notes. Bibliography. Index. Pp. xii, 331. \$34.95 ISBN: 978-1-60344-237-4

Smith, Thomas T. *Until They Are Home: Bringing Back the MIAs from Vietnam – A Personal Memoir*. College Station: The Texas A & M University Press, 2011. Map. Photographs. Index. Pp. 136. \$29.95 ISBN: 978-1-60344-232-9

Wukovits, John F. *Black Sheep: The Life of Pappy Boyington*. Annapolis, Md.: Naval Institute Press, 2011. Notes. Photographs. Bibliography. Index. Pp. xvii, 249. \$34.95 ISBN: 978-159114-977-4

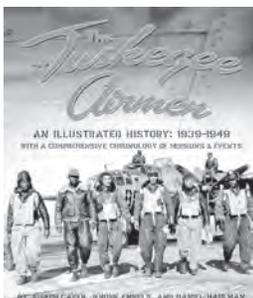
\* Under review

## PROSPECTIVE REVIEWERS

Anyone who believes he or she is qualified to substantively assess one of the following new books is invited to apply for a gratis copy of the book. The prospective reviewer should contact:

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3704 Brices Ford Ct.  
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## Exciting New Book on the Tuskegee Airmen

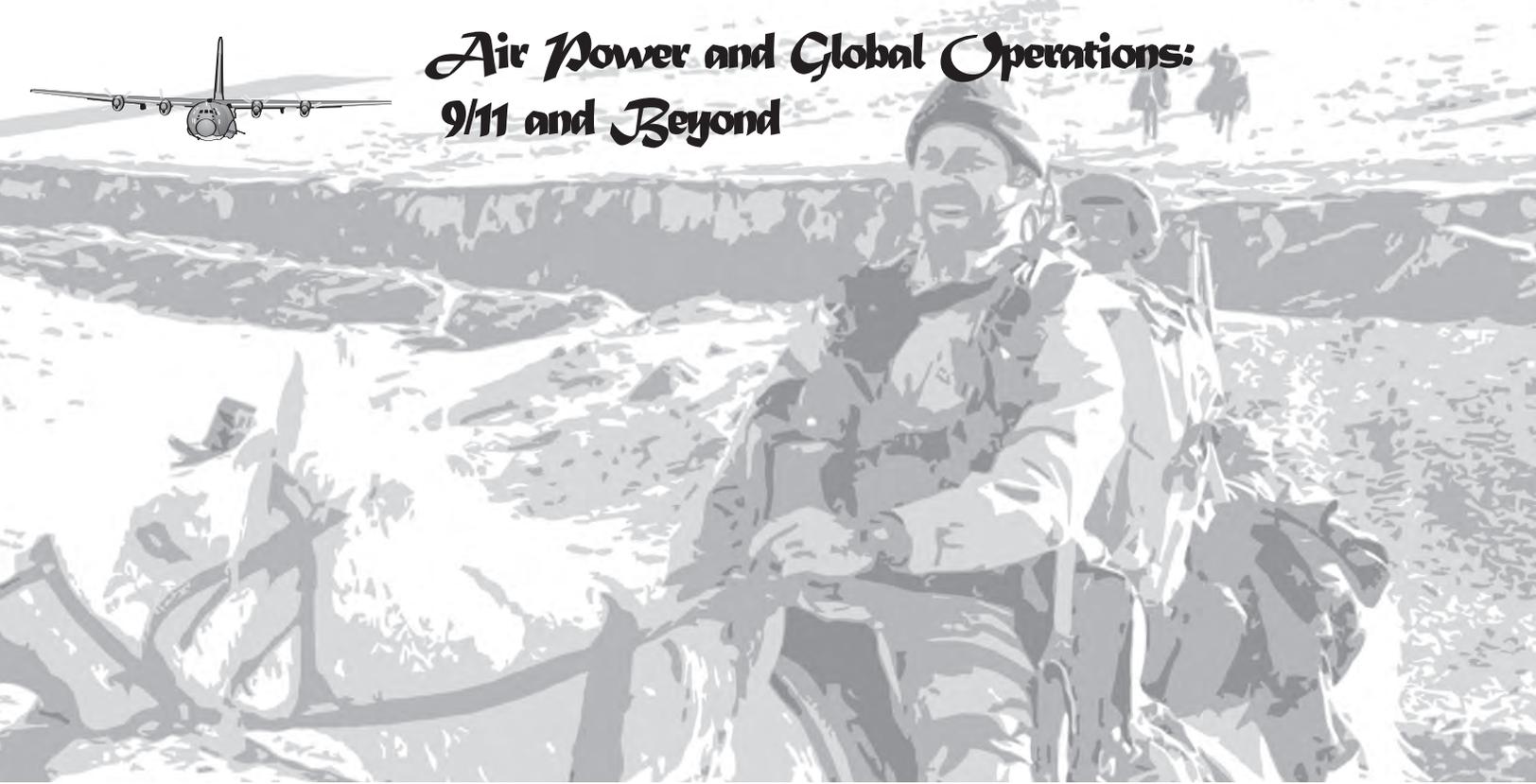


*The Tuskegee Airmen, An Illustrated History: 1939-1949*, by Joseph Caver, Jerome Ennels, and Daniel Haulman, is a comprehensive account of the pioneering group of African-American pilots beginning prior to World War II. Using many never-before-published photographs, the exploits of the pilots—as well as their support personnel—are chronicled in fine detail. An important feature of this book is a chronology detailing missions flown. The facts presented here debunk some of the myths and legends surrounding this exceptional group. A complete pilot roster is also included.

Available from NewSouth Books: [www.newsouthbooks.com/tuskegeeairmen](http://www.newsouthbooks.com/tuskegeeairmen), (334) 834-3556, ISBN 978-1-58838-244-3, \$27.95



# *Air Power and Global Operations: 9/11 and Beyond*



## **The Air Force Historical Foundation Symposium**

The Air Force Historical Foundation will sponsor its biennial symposium on Thursday and Friday, November 17-18, 2011, on the theme ***Air Power and Global Operations: 9/11 and Beyond***. The symposium will take place at the Air Force Conference Center, Andrews AFB, MD, and will feature panels of historians, analysts, and leaders who have directed air operations in this period. Following the Symposium the Foundation will host its annual presentation of awards at a luncheon at Andrews.

The awards luncheon will feature the presentation of two prestigious awards. The fifth annual **General Carl “Tooley” Spaatz Award** will be presented to an individual for a sustained, significant contribution to the making of Air Force history during a lifetime of service, and is named for the first President of the Foundation and first Chief of Staff of the Air Force. Past recipients include General David C. Jones, Maj Gen John R. Alison, Lt Gen Thomas Stafford, and General Larry D. Welch.

The Foundation also will present its fifth annual **Major General I. B. Holley Award** to an individual who has made a sustained, significant contribution to the research, interpretation, and documentation of Air Force history during a lifetime of service. It is named for the distinguished professor who taught military history at Duke University for over six decades, served as an active and reserve Air Force officer, and influenced several generations of military historians. Past recipients include General Holley, Brig Gen Alfred F. Hurley, Herman S. Wolk, and Dr. Alan R. Gropman,

ONLINE REGISTRATION at [www.afhistoricalfoundation.org](http://www.afhistoricalfoundation.org) WILL BEGIN LATER THIS SPRING. Tables, continental breakfast, breaks, and the luncheon are available for corporate sponsorships. Further information is available by contacting **Jim Vertenten** at [execdir@afhistoricalfoundation.org](mailto:execdir@afhistoricalfoundation.org) or by calling (301) 736-1959.

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## Letters to the Editor

Thanks so much for the highly accurate review by Lt. Col. Golda Eldridge, USAF (Ret.), of Danny Stillman's and my book, *The Nuclear Express* (Vol. 58, No. 1, Spring 2011 issue). The reviewer has it exactly right—including the criticisms. Endnotes are lacking; sources are not cited; footnotes refer to sophomoric newspaper articles or movies. That is because our original sources are classified, or they are leakers (including foreign nationals) who do not care to be identified. Since both Danny Stillman and I carried Q, nuclear weapon design and SCI clearances for decades, we had to go to great lengths to calm the concerns of DOE classifiers, CIA executives and our own consciences (we wish to warn of the dangers of proliferation, not help it along). Thus we often refer to unclassified sources to make the point that the information we discuss is out there in the open literature. As at least semi-pro authors, we did check every statement with a second source, but at the end of the day, the reader is only left with

our personal reputations as his/her basis for belief.

Having terminated all clearances before we became authors, and on advice of counsel, we sought comments by the intelligence and weapons communities prior to publication, but we did not await their approval. Col. Eldridge is a most perceptive reviewer. Keep up the excellent book reviews.

*Thomas C. Reed, former Secretary of the Air Force (1976-1977)*

## News

### Historic Squadron Deactivated after Almost a Century

U.K. Ministry Of Defense (April 6, 2011) — The British Royal Air Force 111 (Fighter) Squadron, based at RAF Leuchars in Scotland, has been decommissioned after ninety-four years of service, reports the

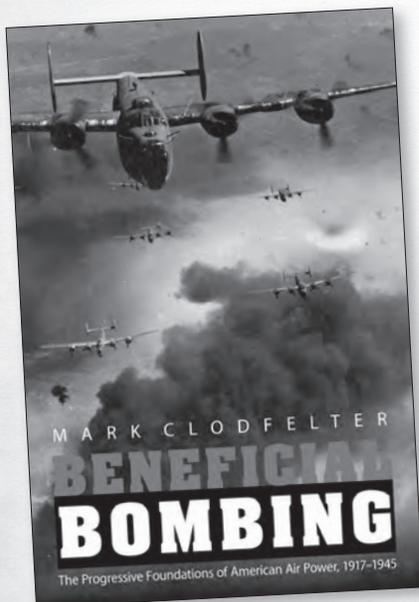
U.K. Ministry of Defense. The squadron, nicknamed the Tremblers, was disbanded after its Tornado F3 fighters were formally retired from service on March 22. The unit, initially formed in Palestine in 1917, played a leading role in the Battle of Britain during World War II. Its aircraft also served during Operation Desert Storm in 1991 and over the Balkans. The Tornado F3 is being replaced by Eurofighter Typhoons.

### 4th Fighter Wing Receives AFHF's Doolittle Award

On June 2, 2011, during a ceremony at the Air Force Memorial in Arlington, Va., the 4th Fighter Wing received the Air Force Historical Foundation's first "Jimmy" Doolittle Award for its significant contributions to air power history. At a luncheon at the nearby Army-Navy Country Club, Gen. Charles "Chuck" Horner, USAF (Ret.)—an illustrious former member of the 4th—delivered the keynote address.

"A thoughtful and well written account of a central thread in the thinking of American airpower advocates and the way its implementation in two world wars took place at the time, was seen afterwards, and has come to be enormously influential in the decision process of our country's leaders into the twenty-first century."

—GERHARD L. WEINBERG, professor emeritus at the University of North Carolina at Chapel Hill and winner of the Pritzker Military Library Literature Award



## Beneficial Bombing

*The Progressive Foundations of American Air Power, 1917-1945*

MARK CLODFELTER

The Progressive Era, marked by a desire for economic, political, and social reform, ended for most Americans with the ugly reality and devastation of World War I. Yet for Army Air Service officers, the carnage and waste witnessed on the western front only served to spark a new progressive movement—to reform war by relying on destructive technology as the instrument of change. In *Beneficial Bombing* Mark Clodfelter describes how American airmen, horrified by World War I's trench warfare, turned to the progressive ideas of efficiency and economy in an effort to reform war itself, with the heavy bomber as their solution to limiting the bloodshed.

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# Reunions

**87th Aerial Port Association** July 7-10, 2011 Fairborn, Ohio. Contact:  
Helen Redwine-Smith  
577 Winona Drive  
Fairborn, OH 45324  
(937) 879-2299  
hfrbrn@aol.com

**Speckled Trout** July 15-16, 2011 Fairborn Ohio. Contact:  
Ron Petry  
4178 Slipperywood Place  
Dayton OH 45424  
(937) 416-3558  
petryrd64@sbcglobal.net

**359th Fighter Group** July 22-24, 2011 Dayton, Ohio. Contact:  
Curtis Jennings  
3383 Heritage Oaks Drive  
Hilliard, OH 43026  
(614) 571-9764  
curtis.jennings@bmwfs.com

**39th Bomb Group** Aug 3-7, 2011, Dayton, Ohio. Contact:  
Liz Van Kampen  
5418 Honeysuckle Lane  
Oregon WI 53575  
(608) 835-0923  
liz.vankampen@sprintprint.com

**B-52 Association** August 9-12, 2012. Dayton/Fairborn, Ohio. Contact:  
Wayne Pittman  
PO Box 340501  
Beavercreek, OH 45434-0501  
(937) 426-1289  
kwavn@earthlink.net

**Det 8 Association** August 15-19, 2011, Fairborn, Ohio. Contact:  
Emerson McAfee  
1357 Red Lick Road  
Berea, KY 40403  
(859) 986-4362  
emcafee@alltel.net

**5th Aerial Port (RAF Mildenhall 1966-1969)** August 18-20, 2011, Fairborn, Ohio. Contact:  
Bill Bishop  
258 Kartes Drive  
Rochester NY 14616  
(585) 581-2595  
w\_j\_bishop@yahoo.com

**927th Tactical Air Gp.** August 18-21, 2011 Dayton-Fairborn, Ohio. Contact:  
Wendell Hurst  
7480 Hardisty,  
W Bloomfield, MI 48324  
(248) 360-4097  
wlhurst@gmail.com

**9th Bomb Group** August 22-25, 2011 Dayton, Ohio. Contact:  
Rollin Maycumber  
2523 Sherona Street  
Hollywood, FL 33020  
(954) 920-7096  
diefrodo@bellsouth.net

**376th Bomb Group** August 31- September 5, 2011, Indianapolis, Indiana. Contact:  
Ed Clendenin  
PO Box 3000, PMB 10  
Georgetown TX 78627  
(512) 868-5490  
mo2tx2az@verizon.net

**489th Bomb Group** Dayton/Fairborn, Ohio, September 8-11, 2011. Contact:  
Bill Smith  
6016 Yarmouth Drive  
Dayton, OH 45459-1452  
(937) 435-1585  
bsmith2040@hotmail.com

**836th Engineer Aviation Battalion (Army)** Fairborn, Ohio, September 8-12, 2011. Contact:  
Evelyn Midkiff  
361 Graystone Court  
Miamisburg, OH 45342  
(937) 847-0948  
emm1628@gmail.com

**63rd Officer Candidate Wing Association.** September 11-15, 2011 Fairborn, Ohio. Contact:  
Col. (Ret) Tom Hansen  
97D Chinook Lane  
Steilacoom, WA 98388  
(253) 380-5261  
C130hans@msn.com

**American X-POWs (WWII-Korea)** September 13-18, 2011 Dayton, Ohio. Contact:  
Linda Irving  
50721 State Highway 410 East  
Greenwater, WA 98022  
(360) 663-2521  
linda@thereunionbrat.com

**349th Troop Carrier Group,** Sept 14-18, 2011, Dayton Ohio, Contact:  
Linda Sparks  
1201 Progress Drive - Apt 37  
Medford OR 97504

**98th Air Refueling Sq.** September 20-23, 2011 Fairborn, Ohio. Contact:  
Col. (Ret) James L. Lee Jr  
8323 Scarsdale Drive  
Indianapolis, IN 46256  
(317) 842-8737  
jlee411@comcast.net

**3500th Pilot Training Squadron** September 20-23, 2012, Fairborn Ohio. Contact:  
Ed Mentzer  
2734 Pheasant Run Lane  
Beavercreek OH 45434-6664  
(937) 426-8807  
edmentzer@aol.com

**The 355th Tactical Fighter Wing** September 23-25, 2011 Dayton, Ohio. Contact:  
Gene Carlson  
1944 Tanglewood Drive  
Lafayette, IN 47905-4183  
(765) 448-1960  
grc46250@juno.com

**Berlin for Lunch Bunch (7405-7580th Operations Squadron)** September 23-25, 2011, Fairborn Ohio. Contact:  
Michael Hushion  
2017 Sumac Court  
Beavercreek OH 45431  
(937) 259-4808

**Laredo Escadrille (PTC-66E)** September 24-26, 2011 Fairborn, Ohio. Contact:  
J Stewart Mosbey  
PO Box 653  
Williamson, GA 30292  
(770) 584-2272  
firstflysqn@aol.com

**Pilot Training Class 62A** September 26-29, 2011 Fairborn, Ohio. Contact:  
William Kehler  
2718 Gray Fox Lane  
Jacksonville, AR 72076-2627  
(501) 985-0547  
bbkehler@aol.com

**7505th USAF Hospital Group** September 28-October 2, 2011. Contact:  
Delores Liska  
6462 Alexandria Drive  
Parma Heights OH 44130  
No Email

**A-1 Skyraiders** September 29-October 1, 2011 Ft. Walton Beach, Florida. Contact:  
Rocco DeFelice  
(210) 659-5965  
rdefelice1@satx.rr.com  
or  
John Larrison  
(830) 779-2000  
jonlarr@lavernnia.net

**51st Munitions Maintenance Sq. Assn** September 29-October 2, 2011 Fairborn, Ohio. Contact:  
Joseph Harker, Jr.  
7316 Scotts Place NE  
Albuquerque, NM 87109  
(505) 821-6399  
delaser@msn.com

**5th Bomb Group** September 28-October 2, 2011 Dayton, Ohio. Contact:

Laura Scharer  
4363 Marian Waldo Road  
Marion, OH 43302  
(740) 389-1250  
waldowoods@earthlink.net

**12th Fighter Maintenance Sq.** September 30–October 2, 2011 Dayton/Fairborn, Ohio. Contact:

James and Marilyn Hawkins  
1293 Mac Drive  
Stow, OH 44224  
(330) 655-2909

**907th Tactical Airlift Group** October 1-2, 2011, Dayton/Fairborn Ohio. Contact:

Louis Salerno  
1117 Hyannis Drive  
Beavercreek OH 45434  
(937) 426-8897  
louis.salerno@att.net

**Air Force Vietnam Security Police (National)** Fairborn, Ohio October 5-9, 2011. Contact:

Phil Carroll  
PO Box 8  
Gladstone, OR 97027  
(503) 353-0443  
k9knightfighter@msn.com

2012

**B-52 Association** Dayton/Fairborn, Ohio August 9-12, 2012. Contact:

Wayne Pittman  
PO Box 340501  
Beavercreek, OH 45434-0501  
(937) 426-1289  
kwavn@earthlink.net

**355th Fighter Group Association**

Fairborn, Ohio October 4-8, 2012. Contact:  
William Cook  
811 Old Forge Road  
Kent, OH 44240  
(330) 541-2653  
bigbilldot@aol.com

**The Association of Air Force Missileers** Great Falls, Montana, October 10-14, 2012. Contact:

Col Charlie Simpson  
AAFM  
PO Box 5693  
Breckenridge, CO 80424  
(970) 453-0500  
www.afmissileers.org  
aaf@afmissileers.org

2013

**The B-52 Defensive Fire Control System Association** June 13-16, 2013 Fairborn Ohio. Contact:

Sharon Lemanek  
1326 Town Hall Road  
Beavercreek, OH 45432  
(937) 426-8557  
kenamel.s.j@fuse.net

**510th Fighter Sq.** September 4-8, 2013 Mason, Ohio. Contact:

Guy Wright  
1701 Mall Road Apt. 14  
Monroe, MI 48162  
(734) 740-3164  
guywright@chartermi.net

**List provided by:**

Rob Bardua  
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Public Affairs Division  
1100 Spaatz Street  
WPAFB, OH 45433-7102  
(937) 255-1386

# MISSION TO BERLIN

The American Airmen  
Who Struck the Heart  
of Hitler's Reich



ROBERT F. DORR Author of *Hell Hawks!*

## Just Released

The book "MISSION TO BERLIN" by Robert F. Dorr was published April 15. This is a general-interest World War II history that focuses on the B-17 Flying Fortress crews who attacked Berlin on February 3, 1945, in the largest mission ever flown against a single target. The book also includes a new look at the entire bombing campaign in Europe.

The young men who flew and maintained the B-17 are at the center of the story but "MISSION TO BERLIN" also has lengthy passages about Americans who flew and maintained the B-24 Liberator, P-47 Thunderbolt and P-51 Mustang.

Bob Dorr is technical editor and co-creator of this journal and was recently honored by the Foundation for his work on Air Power History. Bob describes "MISSION TO BERLIN" as a "Stephen Ambrose-style popular history of the triumphs and tragedies of everyday Americans who did something no one had done before. They fought giant battles several miles up in the sky across vast distances inside aircraft where oxygen was always needed and the temperature was almost always below freezing."

"MISSION TO BERLIN" is available from on-line sources and at bookstores. You can order a signed copy directly from the author by contacting Robert F. Dorr, tel. (703) 264-8950, robert.f.dorr@cox.net

## **Colonel Helen E. O'Day, USAF (Ret.) (1912-2011)**



Helen O'Day was born in Detroit, Michigan, on July 18, 1912, the third child and only daughter of Caroline and Warren O'Day. The O'Days were of modest means, with a large kinship network in Detroit, Chicago, and Cleveland. When Warren died in 1921, Caroline found a job with the city of Detroit and nine-year-old Helen became the family cook. In 1930, Helen graduated with honors from Northwestern High School and went to work for the city's public library system. In 1941, she volunteered as a nurse's aide for the American Red Cross, and remained with the library until joining the military.

In July 1943, she enlisted in the Women's Army Auxiliary [WAAC] "for the duration of World War II plus six months." She was accepted as the first Detroiter in the newly-formed Volunteer Officer Candidate program. Later that year, she was required to reenlist when the WAAC became the Women's Army Corps [WAC]. After her assignment as an assistant mortuary officer at Camp Claiborne, Louisiana, she served in the Pentagon as a staff officer for the Deputy Chief of Staff, Materiel.

From August 1945 to November 1947, she worked as a librarian in the office of Military Government, Berlin. Following this, she returned to the Pentagon as Assistant Recorder, Materiel. Helen was promoted to captain in the Regular Army Air Forces. Until then, all women had been Reservists. After promotion to major in 1951, she became the first woman assigned to the Air Force Legislative Liaison Office in the House of Representatives.

In 1952, Helen was the only woman in Class 52B at the Air

Command and Staff College, Maxwell AFB, Alabama. Throughout the 1950s, she served as officer-in-charge of Air Force protocol. Her most memorable events included a March 1957 trip, escorting Sean O'Kelly, the President of Ireland, to meet President Dwight D. Eisenhower. During a 1958 event, she headed a group greeting Queen Elizabeth II and the entire royal family

From 1961 until her retirement in July 1967, Lt. Col. O'Day served in Paris as Chief of the Paris Visitors' Bureau. Retirement did not last for long as she was recalled to active duty almost immediately. In November, President Lyndon Johnson lifted promotion restrictions for women officers. In January 1968, she became the first woman promoted to colonel in the USAF. She retired again in August 1970.

Throughout her career, Helen O'Day earned many awards and decorations, including: the Legion of Merit, the Air Force Distinguished Service Medal, the Air Force Commendation Medal, and a certificate from L'Ecole du Cordon Bleu, Paris.

Between 1973 and 1998, she served as a volunteer at the Arlington [Virginia] County Library. In 1972, she was elected to the Air Force Historical Foundation's Board of Governors as a Trustee. She remained active and continued to amaze and inspire all who knew her. She died on March 18, 2011, at the age of ninety-eight.

Anyone who wants to memorialize her may make a donation to the Women in Military Service to America, Women's Memorial Foundation, Dept. 560, Washington, D.C. 20024-0560

*By Alan O'Day, Colonel Helen O'Day's nephew*



The mystery aircraft in our Spring 2011 issue was a U.S. Army Cessna UC-35A Citation V Ultra (Model 560) being maintained at Elmendorf Air Force Base, Alaska on May 12, 2008. The aircraft was one of four UC-35As used by the Army's Operational Support Airlift Agency (OSAA) and of a total of thirty-five scattered throughout the Army.

All versions of the plane follow a straightforward design: it's a conventional, low-wing aircraft with the engines in pods on the after fuselage. The C-35 series gives the military a practical means of priority transportation for small numbers of people or small, high-value cargoes. All aircraft in the C-35 series have communications and navigation systems optimized for military use.

"Citation" is a marketing term for several families of turboprop-powered Cessna business jets, some of which have been purchased off-the-shelf by the armed forces. The UC-35 series replaces older, more expensive, turboprop-powered Beech C-12 Hurons and is Global Air Traffic Management (GATM) compliant. The U.S. military operates the UC-35A Army version of the V Ultra; UC-35B Army version of the

upgraded Encore; UC-35C Marine Corps version of the V Ultra and the UC-35D Marine version of the Encore. Our follow-up photo shows a Marine UC-35D in flight.

The UC-35D is typical of the military's worldwide fleet. Two 2,900-pound thrust Pratt & Whitney Canada JT15D-5A turboprop engines provide power. Its wingspan is 54 feet. The UC-35D has a gross takeoff weight of 16,600 pounds and a range of 1,820 miles. It can cruise handily at 45,000 feet.

Compared to the sleek jets, big bombers, and muscular airlifters that often grace these pages, the C-35 series may seem a mite utilitarian, yet air power is made up in part of people and planes that aren't glamorous. No fewer than thirty-one readers weighed in with their responses to our "name the plane" challenge.

Our "History Mystery" winner, chosen at random from correct entries, is Dan Simonsen of Ruston, Louisiana. He'll receive as his prize a copy of the just-published book *Mission to Berlin*, a history of B-17 Flying Fortress crews in one of the largest air battles of World War II.

Let's hope we're not being too hard on you this time around. Can you identify this issue's "mystery" aircraft? Remember the "History Mystery" rules:

1. Submit your entry on a postcard. Mail the postcard to Robert F. Dorr, 3411 Valewood Drive, Oakton VA 22124. Entries may also be submitted via e-mail to robert.f.dorr@cox.net.
2. Name the aircraft shown here. Include your address and telephone number. Entries not accompanied by both an address and a phone number will be disqualified.
3. A winner will be chosen at random from among correct entries and will receive an aviation book.

And let's get serious about those historical treasures in your attic or basement. Some veterans say they just don't remember where their color slides

are. Dig out your slide or snapshot of a rare aircraft and lend it to Air Power History for this contest.

## This Issue's Mystery Plane





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