

AIR POWER

History

SUMMER 2014 - Volume 61, Number 2
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Founded on May 27, 1953 by Gen Carl A. “Tooey” Spaatz and other air power pioneers, the Air Force Historical Foundation (AFHF) is a nonprofit tax exempt organization. It is dedicated to the preservation, perpetuation and appropriate publication of the history and traditions of American aviation, with emphasis on the U.S. Air Force, its predecessor organizations, and the men and women whose lives and dreams were devoted to flight. The Foundation serves all components of the United States Air Force—Active, Reserve and Air National Guard.

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In this summer 2014 issue of *Air Power History*, you will first read Dan Haulman's account of the troop carrier air drops in advance of D-Day, June 6, 1944. Were the drops of the 82d Airborne and 101st Airborne troops a disaster, as claimed by some historians? Or were there other factors at play? The author reexamines the entire story and comes up with a set of different conclusions.

You will also learn about the beginning of American aviation in a couple of reprinted articles by Juliette Hennessy. Ms. Hennessy also recounts some of the legendary stories about the Americans who flew for France as members of the Lafayette Escadrille before the United States entered World War I.

A.D. Harvey authored the next two accounts. The first of Dr. Harvey's articles takes a very close look at the aircraft designed by Nazi Germany. Were they really as technologically superior, as many historians believed or were they not?

The second examines Sir Arthur "Bomber" Harris's views on the so-called *panacea targets*—the theory that by striking certain manufacturing centers, the enemy would have no choice but to surrender.

Also included in this issue are nearly two dozen book reviews. Although all of the reviews are excellent, I especially commend that you read the one about a book entitled *Grounded* proposing the abolition of the United States Air Force and several books received,

Please note that we have now relocated the President's Message to page 5. The departments are in their customary places, including Bob Dorr's ever-popular "History Mystery."

A handwritten signature in black ink, reading "J. Neufeld". The signature is fluid and cursive, with a large loop at the beginning and a long, sweeping tail.

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From the President

Dear Members:

As always, let me thank you for the part each of you has played in the history and legacy of air power across the decades, and for your generous contributions to the Foundation. We are particularly gratified with your response to this year's all-digital vote for our new board of directors. For some this is a more difficult process than the traditional filling out of a ballot and returning it by mail, and we thank you for making this effort.



We are welcoming as new board members four fine gentlemen who will, I am certain, make great contributions to the Foundation: retired Lt. Generals Christopher D. Miller and Stephen G. Wood; Mr. Daniel R. Sitterley, currently serving as the Principal Deputy Assistant, Secretary of the Air Force (Manpower and Reserve Affairs), and retired Colonel Tom Owens. I elected to run once again, and will serve as the Foundation's president through this difficult transitional period as we regain our financial footing.

Our most important communication to you concerns this year's celebration of the Foundation's 60th anniversary. The celebration will be marked by a number of things, including a gala banquet on July 9th featuring the legendary pilot Mr. Bob Hoover as a special honored guest. We also will publish a special commemorative edition of *Air Power History*. This commemorative edition will feature articles from the near and far past, as well as some notable writings from past chiefs of staff; please contact us at the office to be assured of the opportunity to own this special work. Above all, we hope you can enjoy the camaraderie of your fellow members at the banquet. Reservations will be taken online or at the office.

Our efforts at promoting awareness of the Foundation mission via the use of various electronic media, primarily through daily broadcast emails, Twitter, and Facebook, continue to be fruitful. The various communities, including historians, museums, retirees, and those currently in uniform, are learning that we are a good source for historical information and analysis. If you would like to be included on the "This Day in Air Force History" daily email, please advise our Executive Director at execdir@afhistoricalfoundation.org.

As always, we ask for your input as we seek innovative ways to make our organization more useful, attract a wider audience and reach broader participation. We need your feedback to guide us; it is of the utmost importance to our success. Please, let us know your thoughts.

A handwritten signature in dark ink, reading "Dale W. Meyerrose", with a long, sweeping horizontal line underneath.

Dale W. Meyerrose, Maj Gen, USAF (Ret)
President and Chairman of the Board

BEFORE THE D-DAY DAWN: THE PERFORMANCE OF THE TROOP CARRIERS AT NORMANDY





Daniel L. Haulman

(Overleaf) Troop carrier C-47s, bearing invasion stripes fly during the invasion of southern France in August, 1944.

SOME 820 C-47 TROOP CARRIER AIRPLANES DROPPED MORE THAN 13,000 U.S. PARATROOPERS OF THE 82D AND 101ST AIRBORNE DIVISIONS ON THE COTENTIN PENINSULA

The first invaders of Normandy, on June 6, 1944, did not arrive by sea during the day but by air, at night. Some 820 C-47 troop carrier airplanes dropped more than 13,000 U.S. paratroopers of the 82d and 101st Airborne Divisions on the Cotentin Peninsula. Their purpose was to seize the crossroads village of Sainte-Mere-Eglise and causeways connecting Utah Beach on the east side of the peninsula with higher land to the west. At the same time, they were to strike German beach defenses facing Utah from the rear, block German counterattacks on the beachhead, take key communication centers, and seize bridges and causeways over rivers and marshes. Approximately 100 additional C-47s dropped gliders laden with more troops and equipment before the first amphibious forces landed.¹

How well did the pre-dawn troop carriers do? A common impression, derived from histories that relied more on the oral testimony of paratroopers, instead of air crews or organizational histories, is that the troop carriers performed poorly. Books like Stephen Ambrose's *D-Day, June 6, 1944: The Climactic Battle of World War II*, John Keegan's *Six Armies in Normandy*, and Clay Blair's *Ridgeway's Paratroopers* claim that the troops were scattered all over the peninsula because of the inexperience and poor judgments of the transport pilots.² In this paper, I want to explore that impression and raise some other questions. Why were the troops separated so far from each other? Just how scattered were the drops after all? Were there other reasons the airborne divisions took so long to assemble? In short, has history been fair to the troop carrier pilots?

There were nine primary reasons the airborne troops were scattered. First, the paratroopers and some of the gliders dropped at night. There were no night vision goggles in 1944. Darkness obscured the visibility of key landmarks. However skilled the pilots and navigators, they could not manufacture the light needed to see what they were looking for. They had to depend on what little moonlight was available, a few lights set up on the ground by pathfinders, and the dim lights of adjacent transports. Besides that, they had only the light from enemy anti-aircraft artillery fire and from the

crashes of their burning comrades, which interfered with their observations of the pathfinder lights.³

Second, there were unexpected thick clouds. As most of the troop carrier airplanes crossed the coast of France, they entered thick cloudbanks, at different altitudes, that filled much of the sky between 300 feet and 2,500 feet. The planes were to cross the coast at an altitude of 1,500 feet and then descend to 700 feet for the drops. To avoid colliding in the thick haze some pilots instinctively spread out the tight nine-plane V formations into which they had been packed, the ones on the left going farther left and the ones on the right going farther right. Some of the airplanes climbed and others descended. By the time the airplanes emerged from the clouds, some seven minutes later, they were too far apart to see each other in the darkness. They could no longer use each other to determine where and when to drop. The alternative would have been a host of aircraft collisions that would have been much more disastrous.⁴ In fact, some sets of transports emerged from the clouds even closer together than when they entered, because the pilots were attempting to keep their neighbors within sight, but overall the formations emerged from the clouds were more widely scattered than planned.⁵

Third, there was heavy flak, especially for later formations, once the troop carrier planes emerged from the clouds along the coast. The Germans launched a tremendous amount of anti-aircraft fire when they heard the hundreds of aircraft flying just a few hundred feet overhead. Since the transports were dropping at altitudes of only 700 feet, they were within range not only of anti-aircraft artillery, but also enemy machine-gun fire from the ground. Searchlights and tracers illuminated the sky, further blinding the pilots and illuminating airplanes no longer obscured by clouds. Three quarters of the troop carrier pilots had never been under fire before. Many instinctively changed course, going to the right or left, climbing or descending. To avoid being hit, some C-47 pilots increased speed more than 50 knots over the 100 knots prescribed for the drops.⁶ Despite these maneuvers, many C-47s fell to flak, although not as many as British Air Marshal Sir Trafford Leigh-Mallory had predicted.⁷ Of the troop carrier airplanes that were shot down

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Given the vast undertaking that D-Day encompassed (right) the troop carriers were a small but extremely important piece of the overall operation.



THE CLAIM IN MANY SOURCES THAT THE TROOP CARRIER PILOTS WERE NOVICES AND LACKED ENOUGH EXPERIENCE OR TRAINING TO ACCOMPLISH THEIR MISSIONS EFFECTIVELY IS FALSE

before dawn on D-Day, the great majority unloaded their paratroopers before crashing.⁸ Their pilots were determined to keep their planes level as long as possible. 450 of the troop carrier planes returned with damage, and 41 failed to return.⁹

A fourth reason for the dispersal was the lack of navigation equipment aboard most of the airplanes. Only the lead airplanes of each formation or serial carried a navigator or the navigation equipment needed to find the drop and glider landing zones. Only two of every five troop carrier airplanes in Operation NEPTUNE carried navigators. Planners did not want to overload the Eureka-Rebecca systems that depended on beacons set up by the pathfinders on the ground, so they limited their use. Only a small minority of the airplanes had special navigation equipment such as GEE.¹⁰ The great majority of the troop carrier pilots depended on seeing neighboring airplanes, but those airplanes, despite their zebra stripes, were no longer visible because darkness, clouds, blinding air defenses, and the breakup of the formations. Left without their visual guides, most of the pilots dropped by estimating how far they had gone in a given time since crossing the French coast.¹¹ It is no wonder that they were often wrong. A few airplanes that had sped up because of flak found themselves almost at the English Channel on the other side of the peninsula when their heavily-laden troops dropped.¹²

Fifth, many pilots expected to see lighted tees on the ground that the pathfinders were supposed to have set up. Many of the tees did not appear because enemy troops were nearby. Illuminating the tees would have given away the pathfinder positions and alerted the Germans as to where the drop zones were. To avoid ambushes, some of the pathfinders did not illuminate their tees.¹³

The fact that many of the pathfinders themselves had landed in the wrong place was a sixth reason for the scattered drops. Clouds from a front complicated the pathfinder drops as much as they

did the later drops in the pre-dawn hours of June 6. Even if the troop carriers who followed the pathfinders had flown precisely, they might have dropped in error because the pathfinders on whom they guided were in error in many cases. Only thirty-eight of the 120 pathfinders landed directly on their targets, and they had less than an hour to reach the proper zones to mark before the arrival of the bulk of the troop carriers.¹⁴

Orders commanding radio silence furnished a seventh reason for the scattered drops. To preserve the element of surprise, pilots were ordered to stay off the radio. Had the troop carrier pilots had been allowed to communicate with each other, they might have been able to reestablish their formations or at least let each other know when they were dropping so that they could drop together.¹⁵

An eighth reason the paratroop drops were so scattered was the wind. Part of the same front that delayed the D-Day operation brought with it high wind from the northwest. This wind, often more than twenty knots, pushed the C-47s faster than they were supposed to go and sometimes diverted them from the prescribed route. Pilots moving faster than they intended because of the wind sometimes dropped their paratroopers beyond the intended drop zones if they were dropping a set number of minutes after crossing the coast. The same wind would later affect the paratroopers themselves.¹⁶

A ninth reason for the scattered dropping of the American airborne troops on D-Day was the fact that the troop carrier planes were significantly overloaded. Pilots found the overloaded aircraft harder to control than in practice drops. In order to compensate for the excess weight on each aircraft, because of additional equipment being carried with the paratroopers, the pilots were forced to increase the speed of the aircraft to maintain lift. Not all the acceleration was caused by pilots instinctively reacting to flak that they never faced before. Faster

Pathfinders and aircraft crew just before D-Day in front of their C-47 Skytrain in England, June, 1944.



HOW FAR WERE THE TROOPS REALLY SCATTERED? ...35 TO 40 PERCENT OF THE PARATROOPERS LANDED WITHIN A MILE OF THEIR INTENDED DROP ZONES...AND 80 PERCENT WITHIN FIVE MILES

jump speeds increased the scattering of the dropped troops and their equipment, but slower speeds would have resulted, in some cases, in the stalling of the aircraft. Still, the pilots attempted to get as close to the 110 miles per hour speed for dropping that was prescribed.¹⁷

Other reasons for the scattered drops are questionable. The claim in many sources that the troop carrier pilots were novices and lacked enough experience or training to accomplish their missions effectively is false. Most of the pilots had hundreds of hours of flight experience, and did not react frantically when faced with the unexpected cloud bank, winds, or flak. True, many of them had never faced flak before, but it would be false to conclude that the drops were as poor as those of Operations LADBROKE and HUSKY over Sicily in 1943, when many of the gliders and paratroopers were dropped by accident into the Mediterranean Sea. Additionally, to that some of the pilots had gained experience from that operation. Another false claim is that the drop was so poor that one Operation NEPTUNE team landed in the English Channel, when in reality the aircraft they were on was shot down and ditched and all on-board were rescued.¹⁸

It is very possible that persons familiar with the failures of troop carrier pilots in Operations LADBROKE and HUSKY assumed falsely that the troop carriers of Operation NEPTUNE were equally guilty of inexperience, and that they dropped as poorly as they had over Sicily in 1943. During Operation LADBROKE, only twelve gliders landed in the general vicinity of the drop zone, and at least sixty-five came down in the Mediterranean Sea. During Operation HUSKY, a complicated flying course, high winds, smoke, and darkness caused the drops to be very scattered. Indications are that despite the many problems of Operation NEPTUNE on June 6, 1944, they were not nearly as bad as those of the earlier operations over Sicily in 1943.¹⁹ According to one military expert, airborne

and troop carrier failures over Sicily in 1943 and later over the Netherlands in 1944 persuaded some in the Army that such operations were foolhardy, and to lump the Normandy airborne missions with the others as a fiasco, when in reality it was more successful.²⁰

Paratroopers who took very long to assemble naturally blamed the troop carriers for scattering them badly. Of course, the more separated the paratroopers were on landing, the longer it took them to gather into effective fighting units. By dawn of June 6, only about one-sixth of the 101st Airborne Division had assembled.²¹ General Maxwell Taylor, 101st Division commander, was able to gather only his staff and a few lower-ranking soldiers at first. He remarked, "Never were so few led by so many."²² Both the 82d and 101st Airborne Divisions took about three days to fully unite. By midnight of D-day, only some 4,500 of the 13,000 airborne troops had concentrated.²³

How far were the troops really scattered? According to official records in a study by Dr. John Warren, 35 to 40 percent of the paratroopers landed within a mile of their intended drop zones. More than half the paratroopers landed within two miles of their zones, and 80 percent within five miles. If the paratroopers had been able to travel even one mile per hour toward their objectives, 80 percent of them would have reached those objectives in the six hours they had between the drops and H-Hour at 0630.²⁴

Intelligence officers calculated that 74 percent of the 216 airplanes in the first D-Day mission dropped accurately.²⁵ The 435th Troop Carrier Group dispatched forty-five C-47s for the paratroop drops. Intelligence officers later estimated that at least thirty-seven of the airplanes dropped within two miles of the drop zone and twenty-five transports dropped within one mile. The 435th lost only three transports on the mission.²⁶ Of the 2d battalion of the 505th Parachute Infantry Regiment,



Inside a troop carrier C-47.

THE AIRBORNE INVASION WAS SUCCESSFUL NOT ONLY BECAUSE OF THE HEROISM OF THE PARATROOPERS, BUT ALSO BECAUSE OF THE TROOP CARRIER PILOTS WHO DELIVERED THEM

twenty-seven of thirty-six sticks either hit their designated drop zone or landed within a mile of it.²⁷ Both the division commanders, General Matthew Ridgway and General Taylor, landed so close by the places where they were to set up their headquarters that they were well in place by dawn.²⁸ Brig. Gen. James M. Gavin, commanding a regiment of the 82d Airborne Division, remarked in a June 9 letter of thanks to the 50th Troop Carrier Wing commander: "every effort was made for an exact and precise delivery as planned. In most cases this was successful."²⁹ Brig. Gen. Paul L. Williams, the leader of the IX Troop Carrier Command, complimented his three wing commanders for "the very high degree of efficiency exhibited in this operation."³⁰

In the face of all this evidence, how do we account for the impression that the troop carriers did a poor job? If the drops were more accurate than many veterans remembered, why did the paratroopers take so long to assemble? Were there any other reasons besides the scattered drops that contributed to the failure of the troops to unite quickly? I want to suggest eight other reasons.

First there was the terrible terrain. A great deal of the territory was flooded, and many maps and reconnaissance photos suggested that the meadows were really marshes and swamps.³¹ Many of the troops who expected to land on reasonably dry land descended instead in water, not just because the transports had dropped them in the wrong place, but because some of the right places were wet instead of dry. Much of the land was also compart-

mentalized by hedgerows with imbedded trees. Open ground was often studded with enemy obstacles to discourage glider landings. Even if the troop carriers had dropped precisely, the paratroopers and glider troops would have had difficulty assembling rapidly because of the need to cross hedgerows, swamps, and obstacles.³² Even for the minority of paratroopers who landed where they were supposed to, gathering into effective fighting units was a challenge. What they found on the ground was not always what they expected to find. The location of landmarks did not always match the maps. Troops were often confused because so many of the hedgerows, fields, and swamps looked alike. In the largely flat country, they had difficulty telling one from another. But the terrain that delayed the paratroopers to assemble also delayed the arrival of the enemy. Both Germans and Americans faced some of the same problems with the terrain of the eastern Cotentin Peninsula.

A second reason the paratroopers did not assemble rapidly after landing was enemy fire. No fewer than three German divisions occupied the Cotentin peninsula, outnumbering the airborne troops by at least three to one in the predawn hours of D-Day.³³ The Germans had heavy artillery and tanks, not immediately available to the paratroopers. One of the divisions lay in the vicinity of the drops, and individual paratroopers often landed among enemy troops. Even if the paratroopers had known exactly where to go to assemble, obstacles much more dangerous than hedgerows and swamps lay in their paths.

A third major factor delaying troop assembly on the ground was darkness. Members of the 82d and 101st Airborne Divisions used a variety of sound and light devices and passwords to identify each other because they could not easily see each other in the night.³⁴ The same darkness that contributed to the inability of troop carrier pilots to see their proper drop zones also prevented paratroopers from seeing each other. Daylight would have accelerated assembly considerably. Not only could the troops not see each other very well, they could also not see landmarks very well.

A fourth factor was drowsiness; the paratroopers were tired. They had been waiting for the operation to launch for some time in England before General Eisenhower had given the word to go. They began taking off around midnight, and dropped after a dark, droning flight across the English Channel. Even if they had been rested before the flight, they would have had trouble staying awake, especially if they had taken pills given to them to fight airsickness on the flight. Many had taken the medication, and found themselves extremely sleepy when they dropped.³⁵ Their drowsiness slowed down their assembly.

A shortage of radios for communication was a fifth factor that delayed troop assembly. Most paratroopers did not carry radios. Those who did often lost them while landing, or the radio was damaged on impact. An estimated sixty percent of the radios dropped with the paratroopers were lost. Gliders



that were supposed to deliver larger radios for communication beyond the local area often crash-landed, resulting in malfunctioning equipment and the inability of officers to communicate with other units.³⁶

The paratroopers also had difficulty assembling on the ground due to the heavy loads they carried. Many soldiers dropped with more than 100 pounds of equipment.³⁷ Lugging such equipment across the ground slowed movement because vehicles did not arrive until the first glider landings around 0400.³⁸ Many of the vehicles on the gliders did not land without damage, and were not available for use in any case.

Wind was a seventh factor that affected the air-drops. Although the paratroopers generally exited the airplanes from an altitude of only about 600 feet, they drifted slowly to earth on a huge wind catcher. Unlike parachutes today that allow the trooper to guide his descent, the paratroopers of 1944 landed wherever gravity and wind took them. Many of the troops intending to land on drop zones outside of the French town of Ste.-Marie-Eglise, for example, were blown directly into the center of town where they were easy prey for the German defending garrison. Wind blew one of the parachutists into a church steeple. Even if an airplane dropped troops exactly over an intended zone, strong winds could blow the parachutes considerably off course on the way down.³⁹

A final reason for the delay in paratroop assembly was the very nature of a World War II paratroop drop. Even if all had gone ideally, and the troop carrier airplanes had dropped exactly when and where they were supposed to, the paratroopers would have been scattered.⁴⁰ As each paratrooper jumped, he knew he would not land with the man who just jumped or the man who would jump next. For a time he would be on his own. He would be even farther from the men who jumped a few feet ahead of

him or a few behind him. The paratroopers dropped from each plane in a line called a "stick." By "rolling up the stick," they attempted to assemble. The first men to jump walked in the direction of the airplane, the last men walked in the opposite direction, while the men in the middle stayed put. Some of the men did not even know exactly what the course of the airplane was, because they could not see it as its noise faded away.

The scattering of the paratroopers in the predawn hours of D-Day was worse than planned but better than many of the paratroopers themselves imagined. Even given the scattered drops and the slow assembly, the paratroopers were able to accomplish most of their objectives. The 82d Airborne Division captured the town of Ste.-Marie-Eglise by the early morning of D-Day.⁴¹ General Kurt Student, the foremost German authority on airborne operations in World War II, acknowledged that the U.S. airborne operation substantially speeded the Allies' taking of initial objectives and significantly reduced the American casualties on the Utah beach landings.⁴² The airborne operation succeeded, not only because of what the paratroopers did on the ground after landing, but also partly because of the drops themselves.

The scattering, even if it were not as bad as some imagined, was a sort of "blessing in disguise." Faced with American troops descending all around them, the German 91st Division was confused. Paratroopers were able to sever enemy communications over a wider area. The Germans overestimated the number of paratroopers they were facing. They could not find a center of gravity to counterattack. Some German officers even imagined that the scattered drops were part of a deliberate saturation drop to overwhelm the defenders from above. Scattering the troops surely did not do as much good as harm, but it provided certain benefits.⁴³

The invasion of Utah beach succeeded more

than that of Omaha partly because of the airborne operation behind Utah. The airborne invasion was successful not only because of the heroism of the paratroopers, but also because of the troop carrier

pilots who delivered them. History should remember the troop carriers at least as much for their successes as for their failures. To them, as much as to the ground troops, belongs the glory of victory. ■

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13. Weigley, p. 76. Warren, p. 60. Moore, p. 13.
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38. *Ibid.*, p. 135. Moore, p. 14.
39. Ryan, p. 130. Young, pp. 110-11. Gavin, p. 103.
40. Ambrose, *D-Day*, p. 205. Ridgway, p. 7.
41. Ryan, p. 181. Ridgway, pp. 8, 10. Weigley, p. 93.
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MEN AND PLANES OF WORLD WAR I AND



A HISTORY OF THE LAFAYETTE ESCADRILLE



Juliette A. Hennessy

(Overleaf) Luxeuil-les-Bains, May 1916. (L. to R.) Bert Hall, Bill Thaw, Georges Thénault, Alfred de Laage, Kiffen Rockwell, Elliot Cowdin, James McConnell, Norman Prince. (All photos are courtesy of the National Museum of the U.S. Air Force, Wright-Patterson AFB, Ohio.)



ALTHOUGH THE AIRPLANE WAS INVENTED IN AMERICA, IT MAY BE CONSIDERED IRONIC THAT THE UNITED STATES WAS ONE OF THE SLOWEST NATIONS TO REALLY ACCEPT IT

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The establishment of the concept of the airplane as a new and revolutionary weapons system was slow indeed. To many of the early believers in aviation as air power it must have been frustratingly slow.

It is true that even in the very beginning, following the Wright Brothers' invention, there were a few outstanding visionaries, among them, H. G. Wells, Dr. Alexander Graham Bell and Prime Minister Jan Christian Smuts, who foresaw the tremendous potentialities of the airplane. Later on came such staunch advocates of Air Power as Giulio Douhet and Count Caproni of Italy. Still later we had our own disciples in Captain Paul W. Beck and in General Billy Mitchell. All were voices in a minority; they were considered by the more practical military men of the day as hopeless visionaries and day-dreamers."The opinions of such as these could not be held in very high esteem by the conservative military mind.

Although the airplane was invented in America, it may be considered ironic that the United States was one of the slowest nations to really accept it. As a matter of fact, by the time of entry of the U.S. into World War I in 1917, the United States ranked seventh in strength as an air

power. France, England, Italy, and even Russia outranked us in this category.

In spite of the proven capabilities of the airplane as a weapons system during World War I, crude though the systems and procedures may have been, and in spite of the proven potentialities of the airplane as a bomber in the strategic concept following World War I, it was not until World War II was well under way that the airplane actually came into its own.

Perhaps the slow growth of air power may be attributed to human nature and to the fact that the military mind has always been geared to tradition and is reluctant to change. For instance, the cavalry was actually outmoded when the first good repeating rifle was invented and was doomed when the Gatling gun of 1862 became a military weapon. Yet, the cavalry was considered a vital part of the military structure until just prior to World War II, when it had to be supplanted by tanks.

The pattern for conservatism was followed by Congress, as evidenced by the scant attention paid to aviation prior to 1913. In March 1911, Congress allocated the first specific appropriation for Army Aeronautics in the amount of \$125,000 for the following fiscal year; for the next year Congress allotted \$100,000 for aeronautics.

Congress passed little air legislation and promoted very little interest in aviation. However in December of 1912, President Taft appointed a commission to report to Congress on a National Aerodynamic Laboratory. After three meetings the

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(Left) The Lafayette
Escadrille, July, 1917.

(Right) U.S. Representative
James Hay, (D. Va.)



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commission recommended the establishment of such a laboratory patterned after the one in Great Britain and to come under the Smithsonian Institute in Washington, D.C. Then in January 1913, the Senate passed a bill authorizing the establishment of a National Aerodynamic Laboratory and on May 9, 1913 President Woodrow Wilson approved twelve advisory members. After much studying and investigation on the part of this committee, legal technicalities prevented the actual formation of the laboratory. It was not until about two years later on March 3, 1915 that President Wilson was authorized by the Congress to appoint the National Advisory Committee for Aeronautics.

Representative Hay as an Air Advocate

Representative James Hay of Virginia became an advocate of legislation to promote a better Air Service early in 1913. Representative Hay tried early that year to separate the Air Service and to give it greater stature and importance. The War Department did not favor the bill as introduced by Representative Hay. Many of the officers felt at that time that the air arm had not developed sufficiently to be placed in the Army line as a separate unit. Others objected because it made no provisions for certain captains and lieutenants already on active duty. These objections to a separate corps were upheld by the officers of the Air Service. In the face of such opposition from the officers most closely associated with aviation, the bill was abandoned by the Military Affairs Committee. This was one of a series of frustrating attempts through the years to make the air service a separate and distinct unit with its own command structure. It must be pointed out that Captain Paul W. Beck, later killed in a military accident, was one of the very few staunch advocates for a separate service.

On May 16, 1913, Representative Hay again introduced an air resolution, which became known as

H. R. 5304. In many respects it was identical to his previous proposal. But again there was opposition from within the corps of officers to separate the Air Service and again Captain Beck was just about the only supporter of the bill. Captain Beck wanted aviation removed from the Signal Corps because he felt that if it remained under the Signal Corps it would probably never achieve any size or importance; further, he believed that the longer the Signal Corps had control of aviation the more difficult it would be to break away in later years. But as of this time, even the few staunch advocates for a separate air arm did not contemplate the airplane as a powerful war weapon of the future; apparently the main issue was the growth of the service rather than its importance to the Army, and to the country in particular.

H. R. 5304 was passed by the Congress on July 18, 1913 and was the most important measure yet approved on air legislation. It authorized the Aviation Section under the Signal Corps and provided many of the benefits which had been advocated. Then finally, this same Congress appropriated for the Fiscal Year 1914 \$250,000, or twice as much as had heretofore been granted.

The Men—1913, 1914

With the termination of 1913 official historical records indicate that there were twenty officers on duty at the Signal Corps Aviation School in San Diego. This was the only official school in existence for many years during those periods of early growth of military aviation. These twenty were:

1st Lt. T. F. Dodd, CAC
1st Lt. B. D. Foulouis, Inf.
1st Lt. Harold Geiger, CAC
1st Lt. L. E. Goodier, Jr., CAC
1st Lt. R. C. Kirtland, Inf.
1st Lt. H. LeR. Muller, Cav.
1st Lt. W. C. F. Nicholson, Cav.



Benjamin D. Foulis, seen here as a brigadier general.

**THIS BOARD
OFFICIALLY
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THAT ALL
FUTURE AIR-
PLANES PUR-
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THE ARMY BE
OF THE
TRACTOR
TYPE**

2nd Lt. J. E. Carberry, Inf.
2nd Lt. C. G. Chapman, Cav.
2nd Lt. V. E. Clark, CAC
2nd Lt. H. A. Dargue, CAC
2nd Lt. J. P. Edgerley, Inf.
2nd Lt. B. Q. Jones, Cav.
2nd Lt. T. D. Milling, Cav.
2nd Lt. J. C. Morrow, Inf.
2nd Lt. D. B. Netherwood, CAC
2nd Lt. H. B. Post, Inf.
2nd Lt. Fred Seydel, CAC
2nd Lt. W. R. Taliaferro, Inf.
2nd Lt. R. H. Willis, Jr., Inf.

By early February, 1914, only eighteen officers were on active duty with the Aviation Section of the Signal Corps. Prior to this date eighteen other officers had been relieved from duty with the Aviation Section and twelve others had been killed. This meant that for a period from 1909 when the first flying machine was purchased by the Army until 1914, only forty-eight officers had been detailed to flying duties, or assigned to duties involved with flying.

A short tribute is hereby paid to the twelve officers who had been killed up until this date:

1st Lt. Thomas E. Selfridge
2nd Lt. G. E. M. Kelly

2nd Lt. L. W. Hazelhurst
2nd Lt. L. G. Rockwell
1st Lt. Rex Chandler
1st Lt. Joseph D. Park
1st Lt. Loren H. Call
1st Lt. Moss L. Love
2nd Lt. Perry C. Rich
2nd Lt. E. L. Ellington
1st Lt. Hugh M. Kelly
2nd Lt. Henry B. Post

Lt. Post was killed on February 9, 1914, in a Wright model "C" when he crashed into San Diego Bay. He had just reached a height of 12,140 feet for a new altitude record and which was about 500 feet higher than Lincoln Beachey's official altitude record. The accident investigators reported that from that altitude Lt. Post descended to approximately 1,000 feet without incident, and from about 1,000 feet to 600 feet at an increasingly steeper angle. At about that altitude the plane assumed a vertical nose-down position and crashed into the Bay.

This incident is recorded here because it was one of several which gave the "C" model quite a bit of notoriety and one of the concluding incidents which helped to condemn that particular airplane. The government had originally purchased six "C" models and five of them killed six men. The sixth one was destroyed in Manila Bay, when Lt. Frank P. Lahm had attempted a water takeoff and nose-dived into the Bay after he had attained a height of about fifty feet. Also this was the same model which nearly killed Lt. H. H. "Hap" Arnold at Fort Riley, Kansas in 1912.

All of the accidents in which the "C" models were involved had a common characteristic—the nosing over of the airplane as it picked up speed. An investigating board after the Post accident concluded that the elevator of the "C" was too weak and as the speed of the airplane increased, so did the angle of dive. This caused the airplane to nose over, and apparently the effect could not always be overcome by the pilots.

The actions of this investigation board were historic in another way. This board officially recommended that all future airplanes purchased by the Army be of the tractor type; this in effect, sounded the official death knell of the pusher-type airplane and which was not to be used again successfully until the B-36 of the mid-forties.

In the early days of the Aviation Section all the personnel assigned to aviation duties came from other line units of the Army such as the Infantry or the Cavalry. This was true also of the enlisted personnel who were assigned to the Aviation Section as a result of indicated desires or because of some mechanical aptitudes or abilities. Some of the enlisted men even learned to fly the airplanes, although there were no specific provisions in regulations authorizing such flying; but then, neither were there provisions prohibiting it. By 1914, some fourteen enlisted men had learned to fly, including Sgt. Vernon L. Burge who was the first enlisted man taught to fly—by Lt. Lahm in the Philippines.



THE COMPETITION IN THE AIRPLANE BUILDING INDUSTRY ACCELERATED SLOWLY, KEEPING PACE ONLY WITH THE DEVELOPMENT OF AVIATION INTERESTS IN THE MILITARY.

The Machines—1913, 1914

The competition in the airplane building industry accelerated slowly, keeping pace only with the development of aviation interests in the military. For a long time only the Wrights built successful airplanes, although there were many inventors who announced and claimed that they had invented the machine which solved all the problems of flying. Gradually, however, other companies did produce successful flying machines, among the most notable of which were the Burgess Company and the Curtiss Company. Being younger and more energetic than the older Wright Company both researched new ideas. As a result, both were soon producing the tractor-type airplane which quickly outmoded the pushers, still being built by the Wrights.

However, while the tractors developed greater inherent stability, the engine up front greatly reduced visibility, and for a while this was considered detrimental especially since the airplane was to be used for reconnaissance. Further, the tractor engine was required to produce greater horsepower in order to achieve a satisfactory range of speed.

At the Signal Corps Aviation School most of the airplanes being used for training purposes were of the Wright pusher models. Curtiss established an operating section on the south end of the field at North Island and conducted an energetic campaign of instruction for and assistance to the Army school. Gradually there developed intense rivalry between the factions of instructors who tried to promote the Wright system and those who tried to promote the Curtiss system. This competition became so intense that school officials considered it detrimental to the good efficiency of the school and combined the two sections. In order that the government be under no obligation to Curtiss, all the Army airplanes were removed to the north end of the field and all instruction under Curtiss stopped.

As we have seen, however, in a very short time, the tractor airplane gained great preference over the pushers.

Glenn Martin, who learned to fly in 1908, and who was an exhibition flyer and designer-builder of airplanes became a producer in 1914. His products were given favorable encouragement by the Inspector General of the Army for flying units. In 1911, Martin established his first factory at Santa Ana; his company later merged with the Wrights to form the Wright-Martin Aircraft Corporation in 1917. In 1918, Martin dissolved this partnership and again established his own aircraft plant which has been producing airplanes for the government ever since.

On July 2, 1914, the first of a series of Martin "T" tractors was bought through local purchase; this plane featured the new Martin landing gear and shock absorbers. The instruments consisted of a gasoline gauge, an air gauge, an oil gauge, an electric tachometer and a thermometer. The plane cost the government \$4,800 without the engine. (Contrast this with the cost of current aircraft.) The Army put on a Curtiss 100 horsepower engine.

Curtiss began delivering the famous "J" models on September 15, 1914. This was the forerunner of the famous "Jennie" series. Captain Muller used this first Curtiss plane to establish a new altitude record of 16,798 feet; later Lt. B. Q. Jones used it to develop acrobatic techniques. In it, Jones executed the first deliberate stalls and stalled loops. It was in this same airplane, about one year later, that Lt. Taliaferro was killed while performing acrobatics.

Burgess-Dunn was another manufacturer supplying the government with airplanes and in December 1914, delivered an armored tractor airplane which cost \$6,025. It was on this airplane that experiments were conducted with the Benet-Mercier machine gun. (Incidentally, the gun alone weighed 1,700 lbs.) The plane was equipped with a powerful 120 hp. Salmson engine.

The first of the new Curtiss JN-2s at the Signal Corps Aviation School, North Island California. Sgt Vernon L. Burge stands under the propeller. The figure in the cockpit appears to be Capt. Foulois. (Vernon L. Burge Collection, Airman Memorial Museum.)



THE MISSION OF THE AVIATION SECTION WAS THE OPERATION OF, OR THE SUPERVISION OF OPERATION OF ALL MILITARY AIRCRAFT, INCLUDING BALLOONS, AND AIRPLANES

Activities of the Flying School at North Island, San Diego

The original personnel of the Aviation Section of the Signal Corps created by the Act of July 18, 1914, consisted of nineteen officers and 101 enlisted men. The following were the first officers to be put on flying status:

Capt. B. D. Foulois
 Capt. L. E. Goodier
 Capt. H. LeR. Muller
 Capt. T. F. Dodd
 1st Lt. W. R. Taliaferro
 1st Lt. T. DeW. Milling
 1st Lt. Carleton G. Chapman
 1st Lt. Joseph C. Morrow
 1st Lt. Joseph E. Carberry

All were rated as Junior Military Aviators on July 23, 1914, according to the provisions of the law.

It might be interesting to note, in general, the mission of the Aviation Section as outlined for us at that time. The mission of the Aviation Section was the operation of, or the supervision of operation of all military aircraft, including balloons, and airplanes, all appliances thereon, and for the training of officers and enlisted men in military aviation.

On September 17, 1914, the Army paid the first official flying visit to the Navy when the commander of the School at North Island, Captain Cowan, together with a civilian instructor, Mr. Francis Wildman, landed a flying boat in San Diego Harbor along-side the *USS San Diego* and was hoisted aboard. After the official formalities, Captain Cowan and Wildman took off from the water, circled the *San Diego* several times and then returned to the landing field.

Prior to the establishment of the altitude record in Sept. 1914, Capt. LeR. Muller had conducted several test flights to determine the best climb angles

and speeds, as well as the rates of consumption of fuel and oil. The flight to 16,798 feet required 2 hours and 27 minutes. The airplane was equipped with a tachometer, gravity needle oil gauge, clock, aneroid barometer and a large registering barograph. Between 12,500 feet and 13,000 feet Muller reported that the engine suddenly lost about fifty revolutions per minute, but that he was able to compensate for the loss by adjusting the mixture needle of the carburetor. Between 14,000 and 15,000 feet he encountered violent turbulence which forced him to hold the airplane level on several occasions, and even to nose down to prevent from stalling. At about 16,000 feet he reported that he had a suggestion of nausea; which wore off, and then finally he experienced a feeling of exhilaration just at the peak of his climb. (No oxygen was used in those days.)

On November 5, 1914 occurred what is officially believed to be the first tail spin. Glenn L. Martin was demonstrating a new tractor to the Army, with Captain Goodier as passenger. Martin was trying slow speeds when at the end of a mile straight-way he turned too slowly and stalled. The airplane hit the ground on one wing and folded up like an accordion. Goodier, who was in the front seat, was thrown forward with such force that his nose was almost severed on the aluminum cowling and an old skull fracture was re-opened. The engine telescoped back and broke both his legs. The fuel tank broke loose, flooded him with gasoline, and the engine shaft bored a hole through his right knee. Martin, in the meantime, received only a scalp wound, for as he slid forward through the thin wall between the cockpits, Goodier served as a bumper to soften the blow.

Goodier was sent to Letterman General Hospital in San Francisco; was relieved from active duty in 1916, but was recalled a short time later.

During the summer of 1914, at the Aviation School, many experiments and tests were conducted by the pilots and men of the school with armaments

The Burgess Model H tractor aircraft.



and ordnance of various kinds, including bombs, artillery shells, grenades, bomb sights and dropping mechanisms. As a result of some of these tests Capt. Muller and others urged the development and purchase of special bombing devices after proving the practicability and accuracy of dropping live bombs from an airplane.

General George Scriven, head of the Signal Corps, did not agree with his ambitious young officers, however, and no bomb sights were purchased. He held the view that the airplane was to be used primarily for reconnaissance work.

On November 25, 1914, Brig. Gen. William Crozier of the Ordnance Department suggested to the Chief of Staff that the Signal Corps consider mounting machine guns on airplanes for offensive use and offered his help to design mounts. The Army at the time was using two types of guns; an automatic 30 cal. 1909 machine rifle which was air-cooled and weighed 29 pounds, and a recently adopted Vickers water-cooled gun weighing 36 pounds. One each of these was used for tests at San Diego.

In December, 1914, the Signal Corps attempted to enter six airplanes and twelve pilots in the Mackay Trophy Contest scheduled for Los Angeles on December 21. Only two of the six planes managed to reach Los Angeles from San Diego. One of the planes was forced down into the Pacific Ocean; the others made forced landings because of engine or fuel failures. Only one officer was killed, however.

The contest was actually held on December 23, and of the two Army airplanes only one was able to finish the requirements of the contest and won the coveted trophy. This was a Burgess tractor flown by Capt. Dodd and Lt. Fitzgerald.

World War I, Summer of 1914

Meanwhile, World War I had broken out in Europe during the summer of 1914. Unprecedented

attention was given to the airplane as a weapon. At the outbreak of the war the British had approximately forty-eight airplanes; the French had 136 and the Belgians had twenty-four, while the Germans had a total of 180.

General Scriven took advantage of an opportunity to appear before the first congressional hearing held after the outbreak of the war in Europe to plug for a larger aviation budget. He pointed out that the year before Germany had appropriated \$45,000,000; Russia, \$22,500,000; France, \$12,800,000; Austria, \$3,000,000; Great Britain, \$1,080,000; Italy, \$800,000 and the United States, \$250,000. (On March 4, 1915, Congress appropriated \$300,000.)

When it was seriously accepted by the nations waging war in Europe that the airplane did greatly aid the armies in battle, the frantic race to develop the air forces began. Thousands of planes were hastily built in Europe and orders were issued to manufacturers in America.

The first bombing from airplanes took place in August 1914, not long after the start of hostilities. Bombs and hand grenades were dropped manually from planes without benefit of bomb sights or accurate dropping devices. In August, German planes bombed Paris, and this event probably marked the first time that the airplane was used against civilian targets as contrasted against strictly military targets. The German Zeppelins did not begin bombing London until March and April of 1915, although they appeared over the city as early as January 1915. The Zeppelins were not too successful. It is difficult to imagine an easier target to shoot down.

The action of the airplane in combat in European skies followed a natural development and evolution. At first, the planes were used almost solely and primarily for reconnaissance in conjunction with ground forces action. Within a very short time the airplane was being used for strategic reconnaissance purposes as well. Out of this action developed the necessity to prevent enemy planes

GENERAL SCRIVEN HELD THE VIEW THAT THE AIRPLANE WAS TO BE USED PRIMARILY FOR RECONNAISSANCE WORK



William Thaw II and Whiskey, mascot of the Lafayette Escadrille. Paul Pavelka in the background.

SHORTLY AFTER THE OUTBREAK OF HOSTILI- TIES IN EUROPE, THE AIRPLANE FELL INTO THREE CATEGORIES, WHICH BECAME THE FORERUN- NERS OF OUR DIFFER- ENT CATEGORIES OF COMBAT PLANES

from using their planes for reconnaissance of the friendly forces. This led to the development of the "protector" airplane, which more or less escorted the reconnaissance planes.

Airplanes then had to be developed to destroy the "protector" in retaliation, and still others had to be developed to fight those fighting the protectors. This was the evolution of the fighter plane.

Consequently, shortly after the outbreak of hostilities in Europe, the airplane fell into three categories, which became the forerunners of our different categories of combat planes. The reconnaissance plane was usually a tractor of about 150-200 hp and carried fuel for about seven hours flying time. The speed varied around ninety mph. The second type plane was the protector or combat plane and was generally a pusher with up to 500 horsepower. It was a heavy plane and usually carried two or three light machine guns and one heavy rapid-fire gun. In general, it was clumsy and slow. It was used to carry bombs too, as was the reconnaissance plane. The third type was the fighter. This pursuit plane was always a tractor, light, fast and very maneuverable and manned by one skilled pilot.

The Lafayette Escadrille

Long before America entered World War I, the Lafayette Escadrille, a group of American fliers in the French aviation service, was organized. Norman Prince, a pioneer American civilian aviator who learned to fly in 1911 under the name "George W. Manor," * seems to have conceived the idea of an all-

*Prince, who held FAI certificate No. 55, was forced to take another name while learning to fly since his family objected to his flying.

American squadron in the French service. Prince arrived in France in January 1915, and immediately went to work to put his idea into effect. The first Americans to join him in his efforts to get the French Government to organize such a squadron were Frazier Curtis, Elliot Cowdin, William Thaw, Bert Hall, and James Bach. The last three were members of the French Foreign Legion who had transferred to aviation in December 1914, and had begun flying training at Bue, France. Cowdin had been in the American Ambulance Service in France; he, Prince, and Curtis signed their enlistment papers in the French aviation service on March 9, 1915, and were sent to Pau, where they were soon joined by Bach and Hall for flying training. Thaw elected to go to the front as a member of a French squadron to gain actual combat experience, with the idea of joining the others later if the American escadrille became a reality.

Meanwhile, another American, Dr. Edmund Gros, one of the heads of the American Ambulance Service in France and later a Major in the United States Air Service, was also dreaming of an American squadron. A number of Americans had already distinguished themselves in the French Foreign Legion and dozens were arriving in France to drive ambulances; this gave Dr. Gros the idea that they might take an even more active part as members of a flying unit. Then he happened to meet Frazier Curtis, who introduced him to Monsieur de Sillac, an official in the French Department of Foreign Affairs. Dr. Gros joined forces with Prince, Curtis, and the others in the effort to get an American squadron organized. Through de Sillac, the Americans were able to present their ideas to French officials who ultimately saw the advantages of having an American flying unit in the French forces. However, it was not until March 14, 1916, that the French Government finally agreed that an American squadron would be organized. The unit was authorized on March 21st.

On April 20, 1916, the *Escadrille Americaine*, officially N 124, was placed on duty at the front. It was commanded by French officers: Capt. Georges Thenault was in charge, with Lt. de Laage de Meaux as second in command; but all the pilots were Americans. The first seven members of the new unit were Norman Prince, Victor Chapman, Kiffin Rockwell, James McConnell, William Thaw, Elliot Cowdin, and Bert Hall. Frazier Curtis had had an accident in training which incapacitated him for further flying, and James Bach had been captured by the Germans in 1915. Many Americans were later added to the ranks, among them Raoul Lufberry, Chouteau Johnson, H. Clyde Balsley, and Didier Masson, the latter having flown with Villa's forces in Mexico.

The *Escadrille Americaine* was from the beginning a chasse or pursuit squadron. Originally provided with 13 metre Nieuports mounting a Lewis gun on the top plane, the squadron changed successively to the Vickers-armed 15 metre Nieuport and then to the Spad. It was customary for the French to recruit their pilots from among the veterans of



Dr. Edmund Gros.

LONG BEFORE AMERICA ENTERED WORLD WAR I, THE LAFAYETTE ESCADRILLE, A GROUP OF AMERICAN FLIERS IN THE FRENCH AVIATION SERVICE, WAS ORGANIZED.

bombing and observation squadrons, and they paid the Americans a very high compliment in sending them directly to the pursuit units.

As soon as the American escadrille arrived on the front the exploits of the American fliers began to attract worldwide attention, and many Americans were anxious to join the unit. Although the French escadrille was the equivalent of an American squadron, it was much smaller consisting of only about six airplanes. It was evident that this small unit could not possibly take care of all the Americans who wanted to volunteer, and this brought about the formation of the Lafayette Flying Corps, a larger organization consisting of all American volunteers in the French aviation service, a number of whom were not in the *Escadrille Americaine* but flew as individual members of French *Groupes de Combat*. As replacements were needed in the escadrille they were furnished from the Lafayette Flying Corps, which was headed by a committee composed of Dr. Gros, Monsieur de Sillac, and W.K. Vanderbilt. The latter, an American millionaire, was made honorary president of the organization and furnished most of the funds to keep the organization going, contributing as much as ten thousand dollars a month. In addition to paying for the passage and hotel accommodations for prospective American fliers, the committee made a modest monthly allowance to each to supplement his pay after he entered the French service, as most of the fliers were noncommissioned officers in the French aviation service and their pay was very small. There was also a system of monetary awards set up for citations and decorations.

As time went on, an elaborate and smoothly running organization came into being. The American aspirant reported to the American repre-

sentative of the committee, Philip A. Carroll, well-known in American air service history, who passed on his credentials, had him physically examined, and sent up for an hour's flight test at Mineola, New York. If satisfactory, he was then sent to France, where he reported to Dr. Gros, was given a second physical examination, and signed his papers of enlistment. He did not have to pledge allegiance to the French Government, so did not lose his American citizenship. If he was found to have no aptitude for flying he was released.

Most of the men of the Lafayette Flying Corps went through an interesting form of training under the old Bleriot system. In this type of training the pilot was always alone in the machine. Beginning with the three cylinder "penguins," incapable of flight, the student was taught to roll straight at full speed. When this was mastered, he passed to the six-cylinder "rouleurs" and from them to a machine capable of low flights, in which he did straight-aways, rising to a height of three or four yards. From this point it was an easy step to real flying, banks, spirals, serpentines and finally the cross-country and altitude tests for the French military brevet or pilot's license. This system was strongly reminiscent of the early training on the Curtiss machine in the United States.

From the Bleriot school, the Lafayette men were usually sent for a brief preliminary training on Nieuports at Avord, and thence to Pau, where they were taught to fly the service Nieuports, do acrobatic flying, and practice combat tactics. When they finished the course at Pau, the pilots were considered ready for the front and were sent to a pool at Le Plessis Belleville. Here they had a chance to fly service types of machines, and sooner or later were assigned to a squadron on the front, in some cases to the *Escadrille Americaine*, but usually, as the Corps increased in size, to a Spad squadron in one of the *Groupes de Combat*.

By the end of 1917, there were Americans scattered among the French fighting squadrons from the Channel to Belfort. They had enlisted as privates, been made corporals on receiving their pilot's license, and were made sergeants after thirty hours over the lines. Some, after 100 hours and a certain number of combats and victories, were made adjutants, and a very few attained commissioned rank. The great majority, however, were corporals and sergeants and lived with the noncommissioned pilots who constituted the great majority of the French Flying Corps.

The total enlistment in the Lafayette Flying Corps was 267, of whom forty-three were released because of illness, inaptitude, or injuries received in flying accidents before receiving the French military brevet. Of the remaining 224, five died of illness and six by accident; fifteen were taken prisoners (of whom three escaped to Switzerland), nineteen were wounded in combat, and fifty-one were killed in action at the front. Those who actually served at the front in French uniform numbered about 180 and fought with the *Groupes de Combat* of the French. These members of the Lafayette



Gervais Raoul Lufbery
(USAF Photo)

LUFBERRY, A MEMBER OF THE LAFAYETTE ESCADRILLE AND THE GREATEST FIGURE OF THE CORPS, WAS ONE OF THE KEENEST AND MOST SKILLFUL FLIERS.

Flying Corps, which included the Lafayette Escadrille, shot down and had officially confirmed 199 enemy aircraft.

Many of the Lafayette Flying Corps members gave their lives heroically in the service of France. Vernon Booth, wounded by an explosive bullet and shot down in no man's land, forty yards from the German lines, calmly set fire to his wrecked Spad under a storm of rifle and machine gun fire, before dragging himself to friendly territory to die; Stephen Tyson was killed in a bitter singlehanded combat against a swarm of Fokkers; Brank Bayries, always the aggressor, always outnumbered, was shot down while attacking a strong enemy patrol many miles behind the enemy's lines.

There were among the Lafayette pilots a number of brilliant fighters. Lufberry, a member of the Lafayette Escadrille and the greatest figure of the Corps, was one of the keenest and most skillful

fliers. Baylies, a member of the Cigognes, the squadron of the famous French aces Dorme and Guynemer, was considered a prodigy, even in this band of aces. He was a dead shot and attacked at such close quarters and so bitterly that each combat was a duel to the death. Putnam was another famed for his reckless attacks. Always on the offensive, he cruised far inside the enemy lines on the prowl for iron-crossed prey, who he attacked with a ruthless disregard of odds, which ran up his victories but in the end led to his death. There were many others too, men like Cassady, Ponder, Lamer, Connelly, Parsons, Baer, and J.N. Hall, whose names often received mention in dispatches.

Kiffin Rockwell shot down the first enemy plane credited to the *Escadrille Americaine* on May 18, 1916, on the Alsatian front. It was his first combat, the first time he had encountered an enemy machine in the air, and the first time he had fired a gun at a German plane. With four shots he killed both pilot and observer and sent the enemy reconnaissance plane down in flames. Rockwell was also probably the first American to offer his services to France, for on August 3, 1914, he had written the French Consul at New Orleans volunteering his own and his brother's services.

In the fall of 1916, the German ambassador to the United States protested that Americans were fighting with the French and that communiques contained allusions to an "American Escadrille," whose planes bore the insignia of the head of a Sioux Indian in full war-paint and feathers. Since America had not yet entered the war, it was deemed advisable not to use the name *Escadrille Americaine* and for a period after November 16, 1916, the squadron was simply called by its official number, N 124. Sometime later, however, the name was changed to *Escadrille Lafayette* at the suggestion of Dr. Gros.

In April 1917, America declared war and in June, General Pershing, with the first contingent of Americans arrived in Paris. It was soon rumored that Americans in the French service were to be transferred to their own Army, and in September a board was appointed to examine Americans who desired to make the change. Since they were to be given both physical and mental examinations to ascertain their fitness to hold a United States' commission another board was appointed in October to conduct the actual exams. This board, composed of Majors R.H. Goldthwaite, Robert Glendinning, Edmund Gros, and William W. Hoffman, travelled from Verdun to Dunkerque, stopping at all air-dromes where Americans were fighting with the combat groups, and examined those who wished to transfer. A list was compiled and the board made its recommendations on October 20, 1917.

A number of the Lafayette men who were recommended had to have waivers because they were considered old for flying—Maj. Raoul Lufberry was thirty-two and Capt. Robert Soubiran was thirty-one. Others had physical defects. Maj. William Thaw's vision in the left eye was 20/80, his hearing was defective, and he had a knee injury. Capt.

Walter Lovell was thirty-three years old, color-blind, and had a slight defect in his hearing. Capt. Dudley L. Hill's vision in the right eye was limited to finger perception only. But these officers were valuable because of their experience with the French and they were all commissioned in the American Air Service with the ranks as given above.

In December 1917, ninety-three members of the Lafayette Flying Corps were transferred to the United States Air Service, while twenty-six transferred to United States Naval Aviation. The remainder chose to stay and continue fighting under the French flag. Many of the men who transferred did not receive notice of their American commissions until January or February 1918, and they continued to serve at the front as civilians still wearing their French uniforms and remaining with the 13th French Combat Group as a French unit. On February 18, 1918, the Escadrille Lafayette became the 103d Pursuit Squadron of the United States Air Service. This squadron had been organized at Kelly Field on August 31, 1917, and sent to France minus its pilots. A detachment of French mechanics was retained to instruct the newly arrived American nonflying personnel in their duties. The squadron, commanded by Maj. William Thaw, still under French orders, was attached to Groupe de Combat 15, for at that time there were no other American squadrons ready for service at the front. Seventeen former Lafayette Escadrille pilots were assigned to the 103d Aero Pursuit Squadron, while others were sent to new pursuit squadrons as they arrived at the front. Many served as commanding officers and flight leaders in the American squadrons.

Of the seven original members of the Lafayette Escadrille, four lost their lives while serving under the French as did Lt. d'Laage de Meaux. Victor Chapman was the first casualty of the escadrille, with Prince and Rockwell following shortly thereafter. McConnell was the last to be killed under the Lafayette colors. By the end of the war Elliot Cowdin had become a major and William Thaw, a lieutenant colonel in the American Air Service. When the American pursuit squadrons arrived in France the 103d Squadron became a training unit at the front for the new pilots. It continued to operate with the French until July 1, 1918, when it was made a part of the 2d Pursuit Group and later became the nucleus of the 3d Pursuit Group. But this did not mean that the 103d didn't do its part in combat. On March 11, 1918, 1st Lt. Paul F. Baer destroyed an enemy airplane near Cervey-les-Rheims. This was the first victory for the 103d and the first scored by an American Squadron on the front. Lieutenant Baer* became an American Ace within a very short time, piling up a score of nine enemy aircraft downed before hostilities were over. Lt. Frank O'D. Hunter also shot down nine enemy airplanes, while Capt. G. Defreest Larner* got seven. Other aces of the 103d were Lt. William T. Ponder,* Capt. Edgar G. Tobin, and Lt. George W.

Furlow. None of the Lafayette men received credit in the American Air Service for the enemy aircraft they shot down while in the service of France.

On May 6, 1918, the 103d Squadron was authorized to carry the American Indian Head of the Lafayette Escadrille as its insignia, for distinguished service with the French Fourth and Sixth armies. On July 29, Maj. William Thaw was made commanding officer of the 3d Pursuit Group at Vaucouleurs and was succeeded as commanding officer of the 103d by Capt. Robert I. Rockwell, who was in turn relieved by Capt. Robert Soubiran on October 18, 1918. These men were all former members of the Lafayette Escadrille. The squadron turned in its best performance on September 13, 1918, the second day of the St. Mihiel offensive, when Lt. George Furlow destroyed three Fokkers, Lt. H. D. Kenyon destroyed two, and Lt. Frank O'D. Hunter got one and aided Lt. G. D. Larner in downing an Albatross. All seven victories were confirmed and the squadron suffered no losses. On September 27, the 103d was commended by General Hunter Liggett for shooting down twenty-eight airplanes since February.

After the signing of the Armistice, the 103d Squadron was one of several air units ordered to Germany with the Army of Occupation, but the order was rescinded and the personnel returned to the United States. On March 21, 1919, the French Fourragere in colors of the French Croix de Guerre was awarded to the 103d signifying that the entire squadron was twice decorated with the French Croix de Guerre.

The Squadron was disbanded on August 18, 1919 at Mitchel Field, but it was reconstituted and consolidated with the 94th Squadron, Pursuit, on April 8, 1924. The 94th, whose insignia had been the Hat-in-the-Ring, took the well-known Indian Head of the 103d as its insignia. Thus the two most distinguished squadrons of World War I were joined, perpetuating the history and traditions of both.

At the end of the war the 94th Aero Squadron was considered the most outstanding American squadron. It had participated in 296 combats and gained sixty-nine victories. When this squadron entered combat on the front in March 1918, it was commanded by Maj. J.A.F.W. Huffer, who had downed four enemy aircraft while serving with the Lafayette Escadrille. In April the three flight commanders in the squadron were all former Lafayette Escadrille men—Capt. Kenneth Marr, Capt. David McK. Peterson, and Capt. James Norman Hall.

On April 14, 1918, Lieutenants Douglas Campbell and Alan F. Winslow of the 94th Squadron each brought down an enemy airplane. These were the first two victories scored in France by a squadron which had been trained in America. Lieutenant Campbell became the first American Ace on May 31, 1918, and later in the same day Lt. Edward Rickenbacker became an ace. Before the war was over, Rickenbacker not only had become the American Ace of Aces with twenty-five enemy aircraft to his credit, but he had also been made commanding officer of the 94th Squadron. Other

* Former Lafayette Escadrille members.

Eddie Rickenbacker and a group of mechanics.



**AT THE END
OF THE WAR
THE 94TH
AERO
SQUADRON
WAS CONSID-
ERED THE
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STANDING
AMERICAN
SQUADRON**

famous aces of the 94th were Maj. James A. Meissner and Capt. Hamilton Coolidge, both of whom shot down eight enemy aircraft (Coolidge was killed by a German antiaircraft shell); and Maj. Reid Chambers and Capt. Weir Cook, each credited with seven enemy aircraft. The 94th had the distinction of shooting down the last enemy aircraft of the war on November 10, 1918. This feat was accomplished by Maj. Maxwell Kirby.

In May 1918, the squadron became a part of the newly formed 1st Pursuit Group commanded by Maj. Raoul Lufberry, acclaimed as the originator of such fighter tactics as the Lufberry circle. Although he had seventeen enemy aircraft to his credit while operating with the French, Lufberry had never downed an enemy plane within the allied lines. Shortly after assuming command Lufberry was killed. In an attempt to keep an enemy plane from escaping to its own lines, Lufberry jumped into an unfamiliar plane (his own was undergoing repairs) and attacked the intruder. His gun jammed and he swerved away. Clearing the gun he rushed the enemy from behind, when suddenly his machine burst into flames and Lufberry leaped to his death rather than die by fire. He did not have a parachute for they were not used in allied airplanes in World War I.

At the end of the war, the 94th was the only American pursuit squadron chosen to serve with the Army of Occupation. It was transferred from the First Army to the Third Army in November 1918. The squadron returned to the United States in June 1919, and was demobilized and sent to Selfridge Field, Mt. Clemens, Michigan, where it was reorganized in July 1919, and went to Kelly Field in August, remaining in Texas for three years. It returned to Selfridge Field in July 1922, and was stationed there until December 1941. During the years between the wars the squadron took part in testing new equipment, training personnel, and developing pursuit tactics. During World War I, the 94th Squadron had used Nieuports and Spads; in

the twenties and thirties it was equipped with a number of different planes, among them the Curtiss P-6, Boeing P-26, Curtiss P-36, and Republic P-43. In July 1941, the unit received its first Lockheed P-38s, which it used throughout World War II.

On December 7, 1941, the Japanese attacked Pearl Harbor, and on December 9, the 94th Squadron was sent to the Naval Air Station at San Diego, California, to help guard the west coast against an expected attack by carrier-based Japanese planes. The attack failed to materialize and in the summer of 1942, the air echelon of the squadron flew with other members of the 1st Pursuit Group to England, accomplishing the first mass air movement over the North Atlantic. In England the squadron was trained by the famous Polish RAF Squadron No. 303 and began its operations with the Eighth Air Force on September 1, 1942, when it flew its first offensive sweep over German-occupied France.

On August 11, 1942, the 94th Squadron gave up the Indian Head for its original Hat-in-the-Ring insignia, and on September 30, Eddie Rickenbacker, former World War I commander, visited the unit, bringing with him individual silver Hat-in-the-Ring insignias. By special arrangement with General Arnold the squadron was allowed to wear these pins, which were put on the officers and men by Rickenbacker. For some reason he pinned the insignia above the pilots' wings and, although nothing was ever worn above the wings, the 94th's pilots wore the Hat-in-the-Ring there throughout the war.

Shortly thereafter the Squadron moved to North Africa with the invasion forces, thus completing the second mass movement of its aircraft across the seas, and here it began escort duty for the Twelfth Air Force. The Luftwaffe greatly outnumbered the Allies in North Africa at that time and the fiercely contested air battles caused many losses in the squadron. The pilots flew every day it was possible to get their aircraft off the ground. They had

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INSIGNIA**

little relief and their forty-mission combat tours were usually over in four months—if they were lucky enough to survive. It was an unusual coincidence that soon after the 94th Fighter Squadron, descendant of the Lafayette Escadrille, arrived in Africa, a French squadron known as the Lafayette Squadron joined the American forces in Northwest Africa and the two units fought side by side in the same theater as elements of the Northwest African Air Forces. The Americans furnished the Lafayette Squadron with hard-to-get P-40's in January 1943, and supplied and equipped it in the same manner as American squadrons. This was the first French unit to be equipped with American planes and it provided efficient air support to its American sponsors.

By the middle of February 1943, the Luftwaffe's strength was on the wane in Africa, but it struggled manfully to cover Rommel's forces as he stabbed furiously through the Kasserine Pass against allied ground forces. The 94th Squadron's P-38's tangled frequently with FW 190's and Bf 109's in that crucial battle. Losses were heavy but they were compensated by the many air victories; the 94th knocked down enemy aircraft almost daily. On April 10, when the Tunisian Campaign was drawing to a close, the 94th Squadron with other members of the 1st Fighter Group, had one of its biggest days, when twenty-five P-38's of the Group shot down twenty-four enemy aircraft near Cape Bon.

Early in 1944, the 94th joined the Fifteenth Air Force in Italy and its P-38 Lightnings were engaged in escorting the heavies on strategic missions against the Germans. Fighter cover was provided in three phases—penetration, target cover, and withdrawal. The targets ranged from Central Romania across the Balkans, over Austria and Czechoslovakia, Southern Germany, and Southern France, and enemy fighter opposition was heavy. At most of the targets, particularly the oil refineries, there was a great deal of flak, which took its toll of the fighters. The Ploesti oil fields in Romania constituted a first priority target and they were hit again and again. On the June 10, 1944, raid on Ploesti, 1st Pursuit Group pilots shot down twenty-eight enemy aircraft, the largest number ever shot down in one day by a single group; the Group losses were only a fraction of those inflicted on the Germans.

In August 1944, the 1st Fighter Group, operating under the 87th Fighter Wing, took part in the invasion of Southern France. The 94th Squadron, based on the island of Corsica with other units of the group, flew fighter sweeps over the Riviera, up the Rhone Valley, and over the enemy airfield complex at Istres, and strafed railroads and highways. After the successful completion of the invasion, the Group returned to Salsola, Italy, one of the Foggia satellites, and resumed fighter escort duty. Occasionally the fighters were assigned to air-sea rescue missions and to escort transports on supply drops to Partisans resisting German occupation, particularly in Yugoslavia. The Group also furnished fighter protection to C-47's evacuating liber-

ated allied aircrews from the Balkans. Early in 1945, the Group escorted the C-54's carrying President Roosevelt and Prime Minister Churchill to Malta and back.

In March 1945, when the Russian offensive was sweeping through the Balkans and Hungary, the American and British forces were surging through the Rhineland, driving east to meet their Russian allies. By this time the 94th Squadron had moved to Lake Lesina in south central Italy and its P-38s were equipped with long-range wing tanks. Consequently, the Squadron was frequently assigned to tactical missions—strafing communications in the German rear and dive-bombing important bridges and railways. Besides the actual damage they did, the fighter attacks helped destroy enemy morale. But these low-level strafing attacks were not accomplished without losses. On one foray between Zell am See, Austria, and Regensburg, Germany, all three squadron leaders of the 1st Pursuit Group were lost.

In April, two P-80 Shooting Stars were brought to the 1st Fighter Group headquarters at Lake Lesina, by an experimental group from Wright Field for testing under combat conditions. This was months before the existence of these new jet planes was made public in the United States. After VE Day, May 7, 1945, the Group began training preparatory to deployment to the Far East and many of the pilots thought they would fly P-80's against the Japanese. However, the war in the Pacific ended before the 94th Squadron left Italy. For a short time after the war, in September 1945, the 1st Pursuit Group operated C-47's over the Italian peninsula, transporting Air Force personnel to rest camps and replacement depots, but the officers and men were soon returned to the United States and the Group was inactivated on October 16, 1945.

The 94th Fighter Squadron, Jet Propelled, was reactivated at March Field, California, on July 3, 1946. It was chosen as the first jet-propelled squadron to operate in Arctic regions and was sent to Ladd Field, Alaska, in August 1947. Its mission was to conduct a large scale Cold Weather Operations Test involving equipment, planes, and men in sub-zero arctic temperatures; however, because of the malfunctioning of the P-80's, the plane test could not be accomplished and the 94th Squadron returned to March Field on February 19, 1948, leaving its jet planes behind. In 1949 the Squadron was one of the first to be equipped with F-86's, and by July 1950, it was stationed at George Air Force Base, Victorville, California. This unit did not see action in Korea, but it had already piled up in two world wars as distinguishing a record as any squadron has ever had.

In August 1955, the 1st Fighter Group (AD) returned to its old home at Selfridge Air Force Base, Michigan, where it was joined by the 94th Fighter Squadron. This change was made under Project "Arrow," a program organized to bolster unit esprit and prestige, in this case by bringing together at their old base a historic group and its famous squadrons. ■

German Aircraft Design during the Third Reich





A.D. Harvey

(Overleaf) The Me 262, getting ready to take off.

(Right) The Kawanishi H8K2 long range flying boat.

(Below right) The Heinkel He 51.



GERMAN VICTORIES IN 1940 AND 1941 OBLIGED MOST ONLOOKERS TO BELIEVE, AS THE GERMANS THEMSELVES BOASTED, THAT HITLER'S REICH HAD THE BEST ARMY, THE BEST AIR FORCE, AND THE BEST-DESIGNED WEAPONRY IN THE WORLD

German victories in 1940 and 1941 obliged most onlookers to believe, as the Germans themselves boasted, that Hitler's *Reich* had the best army, the best air force, and the best-designed weaponry in the world. The Soviet T-34 tank, by the end of 1941, raised serious questions about the superiority of the German army's equipment, and soon similar questions arose with regard to the *Luftwaffe*. In fact it is questionable whether the *Luftwaffe* ever did have the best equipment in the world. One can pick out a number of aircraft in different classes from the 1934-1945 period that were clearly superior to all direct competition—the Kawanishi H8K2 in the long range flying boat class for example, or the Boeing B-29 in the heavy bomber class—but not one of these superior designs were German.

In the run-up to the Second World War, German aircraft design can only be described as mediocre. The Arado Ar 68 and Heinkel He 51 single-seat fighters that equipped the new *Luftwaffe* in the early days of German rearmament were boringly conservative biplane designs that were conceptually out of date compared to monoplanes—all actually slightly older—like the American Boeing P-26, the French Dewoitine D 500, or even the Polish PZL P.11, and their performance was inferior; they were also significantly out-performed by equally conservative but older biplane types, like the British Gloster Gauntlet, the Hawker Fury, and the Italian Fiat C.R. 32.¹ A little later the Heinkel He 111B bomber, though faster than many interceptor fighters when it was introduced into service, was inferior to its contemporary the Savoia-Marchetti S.M. 79,

and the famed Junkers Ju 87 Stuka was markedly inferior to the Northrop BT-1, forerunner of the Douglas Dauntless SBD series of dive bomber, the prototype of which first flew a couple of months earlier than the Stuka. The four-engined Dornier Do 19 and the Junkers Ju 89 Urals bombers that were still being flight-tested when the *Luftwaffe* decided to concentrate on twin-engined machines were inferior to the American B-17 and even the relatively unsatisfactory Soviet ANT 42, which later took part in the small Soviet raids on Berlin in 1941; the poor development potential of the Ju 89 is demonstrated by the mediocrity of the later Junkers Ju 290 maritime patrol aircraft, which was derived from it.

The one apparently outstanding German military aircraft of the pre-war era was the Messerschmitt Bf 109, but the first version to see combat, the Bf 109B was outmatched by the rather older Soviet Polikarpov I-16, which it encountered when serving with the Condor Legion in the Spanish Civil War.² (It has never been clear why the *Luftwaffe* accepted the Bf 109 in preference to the generally superior Heinkel He 112, which was also combat-tested in Spain, though with non-Condor Legion pilots.) The Bf 109 was also slower, less maneuverable and a less steady gun platform than the Hawker Hurricane, first flown only two months later. The Bf 109's prospects were transformed by the substitution of the 635 h.p. Junkers Jumo 210D engine of the B model by the 1,000 h.p. Daimler-Benz DB 600A in the D model and by the 1100 h.p. Daimler-Benz DB 601A or 1300 h.p. DB 601E in the E model, which was the type employed by the *Luftwaffe* in the Battle of France and the Battle of Britain. Nearly twice as powerful as the earlier models, the Bf 109E's main weakness was that at 350 m.p.h. the controls became increasingly heavy, and in a quite shallow power-dive with speeds exceeding 400 m.p.h. the controls required extraordinary muscular strength; except at high altitude it was in no way superior to the RAF's Supermarine Spitfire I and II, which German pilots first encountered over Dunkirk.³

A report by staff of the Royal Aircraft Establishment, Farnborough on a Bf 109E captured in France noted that "the cockpit is too cramped for comfort" and that whereas in the Spitfire, in which

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there was more room to move, the pilot could exert 60 lb sideways force on the control stick, in the German plane he could only exert 40 lb. The British experts also found fault with the way in which the Bf 109E lost directional trim and harmonization of rudder, elevator and aileron controls above 250 m.p.h., and the lack of a rudder trimmer.⁴ These deficiencies were probably due to the controls being designed for a much less powerful aircraft, and it is certainly true that in the even more powerful F and G models flying characteristics deteriorated even further.

The *Luftwaffe* enjoyed a temporary advantage with a new type, the Focke-Wulf FW 190A, introduced in 1941, though the RAF also had a new type, the Hawker Typhoon, relatively clumsy and with an unreliable 24-cylinder engine, but faster than the Fw 190A; and when the Spitfire IX, with an improved Rolls Royce Merlin engine, was introduced the British again had the better fighting plane. The FW 190A also had the disadvantage that the relatively poor performance of its BMW 801D motor at the altitudes at which the American Boeing B-17 bombers operated meant that it was ill-suited to meet what was to become the main challenge faced by the *Luftwaffe* fighter arm, and the defence of the Reich remained heavily dependent on the Bf 109 despite its increasingly difficult handling characteristics. The Focke-Wulf FW 190D re-engined with the Junkers Jumo 213A was the best German fighter to be used in large numbers during the war, but it did not have a better performance than later models of the Spitfire or the USAAF's North American P-51D: the latter, fast, maneuverable, pleasant to fly and with more than twice the range of the Bf 109 or Spitfire even without drop tanks, probably has the best claim to be the outstanding piston-engined fighter aircraft of the Second World War.

Meanwhile, the *Luftwaffe* seemed to have lost

the plot as regards bomber aircraft. The Junkers Ju 88, which once the four-engined Urals bomber had been given up was intended to be the mainstay of Germany's bomber arm, was an excellent design, but early models were not actually superior to the contemporary PZL 37 of the Polish Air Force or the Amiot 351 and 353 and Lioré et Olivier 451 of the French Air Force. The rapid defeat of the Polish and French armies meant that these types were built only in small numbers, whereas nearly 15,000 of the adaptable Ju 88 were produced: but the Germans failed to pursue the two most profitable directions in medium bomber design. No bomber type could carry sufficient defensive armament to hold its own against intercepting fighters, and the British found the solution to the problem with the De Havilland Mosquito, bomber versions of which carried no guns but were fast enough to reduce the risk from enemy fighters. (The *Luftwaffe* did experiment with bombers that flew too high rather than too fast to be intercepted, but the Junkers Ju 86P-1 high altitude bomber, a revamping of a typically mediocre pre-war design, was predictably unable to achieve worthwhile bombing accuracy from a height of seven miles and was built only in small numbers.) The Germans also failed to develop an aircraft with significant bomb load and a powerful fixed forward-firing armament along the lines of the Douglas A-20, Douglas A-26, Martin B-26 and North American B-25. Aircraft of these types were used by both the USAAF and the RAF in Europe simply as bombers, generally operating with fighter escorts above the range of German light flak, but in the Far East, where fighter opposition was sporadic and light flak almost non-existent, they customarily attacked with both guns and bombs.⁵ The best of this class, the Douglas A-26, was initially rejected by the Allied air commander in the New Guinea-New Britain theater because its engine nacelles projected so far forward that they spoiled the pilot's

(Right) A Junkers Ju 87 in a Russian winter.

(Below right) A Lockheed P-80 Shooting Star (post-war).

THE NOTION OF USING SWEEPED-BACK WINGS TO ALTER THE LOCATION OF THE CENTER OF GRAVITY WAS NOT NEW BUT BELONGED TO THE FIRST DECADE OF MANNED FLIGHT



view to either side and thereby seemed to reduce its effectiveness in ground strafing.⁶ Similar use was made on the Eastern Front of the more than 3,000 Douglas A-20s supplied to the Soviet Union, and whereas the Soviet's own Petlyakov Pe-2, their most modern twin-engined bomber in mass production at the time of the German invasion in June 1941, had only two rifle-caliber machine guns in its nose, the Tupolev Tu-2, introduced later in the war, and the post-war Ilyushin Il-28 jet bomber had forward-firing cannon, indicating recognition of the desirability of such an armament in situations favoring its employment. The enormous extent of the Eastern Front, which enabled the *Luftwaffe* to operate the Junkers Ju 87 and the even slower Focke-Wulf FW 189 reconnaissance and close support aircraft without fighter escorts, meant that a medium bomber of the A-20 class would have been of considerable use to them. Instead they had to adapt the Focke-Wulf FW 190 fighter for combined bombing and strafing attacks. The FW 190F and G models could carry a 3,968 lb bomb, equivalent to the bomb load of the Douglas A-20G, North American B-25J and later models of the Martin B-26, and nearly four times the bomb load of the Hawker Typhoon, the RAF's main fighter-bomber, but this involved a serious reduction in speed and manoeuvrability.⁷

In 1944, the hard-pressed Germans brought into service two types seemingly far in advance of anything then available to the Allies, the Messerschmitt Me 163 rocket fighter and the Messerschmitt Me 262 jet. The main point about both types is that they were issued to combat units long before they were ready for it. The basic concept of the Me 163 was that it would gain altitude under rocket power and then operate mainly as a high speed glider using bursts of rocket power to maintain its speed. When functioning properly it handled beautifully, but it had a marked tendency to blow up



like a bomb when the rocket was re-ignited to keep up the speed or, if there was still unexpended rocket fuel aboard at the end of its sortie, when touching down; definitely an aircraft that was a thrill to fly, but it did use up a lot of *adrenalin* that could have been spared if the rocket motor had been made to function safely. The Me 262 was not quite so lethal for its pilots, but it had relatively high take-off and landing speeds, poor throttle response at landing speed, and engines that needed a major overhaul after twenty-five hours of running, as compared to 125 hours for the contemporary but much less sprightly Gloster Meteor, the first jet in RAF service: in practice the engines often burned out even before they were due for service, and unlike the Me 163, the Me 262 was not an aircraft that glided particularly well. The far more reliable and rather faster Lockheed P-80, the USAAF's first jet fighter, was already being tried out in the field when the war in Europe ended, and in Britain the excellent De Havilland Vampire was about to go into mass-production.

Both the P-80 and the Vampire have straight wings whereas the Me 262 had swept-back wings, which of course was the format of the future. This has encouraged the belief that the Germans were ahead of the rest of the world in aerodynamic the-

(Right) A prototype of the Me 163 Komet.

(Below right) The Me 262.

(Below) A flight of de Havilland Vampires.



ory and that the adoption of swept-back wings in the next generation of fast jets was due to German theoretical advances being taken over by their former enemies once they had won the war and were able to pillage German laboratories. It is of course quite true that scientists involved in developing the V-2 rocket had a key role in post-war work on ballistic missiles; but the victorious Allies were much less interested in German advances in the technology of jet flight because they were in fact already ahead of them

The swept wings of the Me 262 actually had nothing to do with aerodynamic theory, and at the speeds available in 1945 conferred no advantage. Originally the Me 262 was intended to have straight wings: it was the discovery that the best available jet motors were heavier than anticipated that made it necessary to give the wings a 19-degree sweep-back in order to keep the aircraft's center of gravity where it was wanted.⁸ The notion of using swept-back wings to alter the location of the center of gravity was not new but belonged to the first decade of manned flight, and to the remote antecedents of the Me 163, which also had slightly swept-back wings. In 1907, the British aviation pioneer J.W. Dunne (now chiefly remembered as the author of the book *An Experiment With Time*) built the first in a series



of tail-less biplanes, in effect the first *flying wing*. Dunne's D-8, a biplane with a 32-degree sweep and a pusher motor behind a very short nacelle, first flew in June 1912: one example was purchased by the Canadian government, their first ever military aeroplane, one by the U.S. Army and two by the U.S. Navy, one of which set a new American altitude record by reaching a height of 10,000 feet, a mere 300 feet short of the then European record.⁹ During the 1920s experiments with tail-less aircraft were carried out by a number of countries: they all involved swept-back wings as a solution to the center of gravity issue. Generally the wings were very thin, containing only structural members with a short nacelle as in the Westland Pterodactyl and Alexander Lippisch's Storch IV, but in the United States John Knudsen Northrop became interested in the possibility of an aircraft with no fuselage at all, the crew payload and fuel all being carried inside the wing. His first fuselageless aircraft, tested in 1930, required a tail plane on thin booms at the rear. However, in 1941 he obtained a government contract to build a 172-foot span piston-engined flying wing bomber that consisted only of a slightly swept wing. A one-third scale model first flew on December 27, 1942, but crashed the following May: three more were built before the end of the war. He also designed the swept-wing XP-56 fighter, with an egg-shaped fuselage, dorsal and ventral fins with no control surfaces and, like the Me 163, no horizontal tail plane, which first flew in April 1944, and an experimental flying wing rocket interceptor, which was tested as a glider in October 1943 and with the rocket ignited at 8,000 feet after a towed launch on June 20, 1944: from this was developed the XP-79 rocket fighter which first flew on December 12, 1945 and crashed after fifteen minutes, killing the pilot.¹⁰ All these were conceptually in advance of the Me 163 and chronologically abreast if not ahead of Ger-

many's own flying wing program, featuring the Horten Ho V with two 80 h.p. engines of 1943 and the Horten Ho IX V-2 jet flying wing which first flew in January 1945. The latter may well have had much the same aerodynamic problems as Northrop designs: "Scheidhauer, the Horten test pilot, after some hesitation, being in the presence of Horten, admitted that he preferred the Me 163 of all tailless aircraft."¹¹ It was not till about 1949 that it began to be realised that both the flying wing concept and the idea of a rocket interceptor that would glide between bursts of rocket power were dead ends, as the disproportionate wing span they involved would make supersonic speeds difficult to achieve and structurally catastrophic once attained.

After the war British experts noted the interest that had been generated in Germany by experiments with swept-back aerofoils in the high speed wind tunnel at Göttingen but concluded that the Germans "have only touched upon the fringe of stability and control aspects of high sweep and low aspect ratio," and also that, at least, with regard to a delta-wing configuration, "the immediately important application of this sort of thing will be to use as a missile with no human pilot."¹² The only design based on theoretical work on possible wing configurations that was built and flight-tested during the war was the Junkers Ju 287, a jet bomber with swept-forward wings. The theory was that swept-forward wings would handle issues of compressibility (i.e. diminution of lift and increase of drag) at high speed just as well as swept-back wings, but would give better low speed performance, for example when making a landing approach. There was also the attraction that the main spar of a swept-forward wing would be far enough back in the fuselage to give a significantly longer weapons bay.¹³

In practice the Ju 287 never came near the speed to make compressibility an issue. It also

appears that the Americans had experimented with a tail-less glider with swept-forward wings in the autumn of 1943, and noted the beneficial effect of the configuration on lateral stability at stalling speeds, so the Germans were only really ahead on actual building an ugly underpowered prototype with engines that were likely to burn out in the course of a single week's employment in combat.¹⁴

A less adventurous design of jet bomber, the Arado Ar 234B, did actually reach *Luftwaffe* front line units. Its top speed of 460 m.p.h. at 20,000 feet made it virtually safe from interception, but that speed was only achievable once it had dropped its bombs, which were carried beneath the fuselage and/or jet nacelles, and during its approach to its target it was not much faster than later models of the RAF's De Havilland Mosquito, which carried a heavier bomb load internally. In practice the Ar 234B was used mainly in low or medium level attacks, in which the crew's inability to see any-

thing directly behind or below them facilitated interception by Allied fighters: and the defensive armament of two rearward-firing cannon sighted by periscope was of minimal practical value.¹⁵ Moreover its Junkers Jumo 004B jet motors were no more reliable than the same motors fitted to the Me 262, though rate of climb was much poorer than with the Me 262, or for that matter than with contemporary piston-engined fighters: at 15,000 feet it was about half that of the Spitfire IX.¹⁶

Every facet of German military organization during World War II continues to exert a curious glamor. There is nothing corresponding to this after World War I, or even with regard to the French (as distinct from Napoleon as an individual) after Waterloo.¹⁷ It is as if people want to believe that there was something superlative, besides genocidal racism and generalized wrong-headedness, about the Nazi period: but the record simply does not bear this out. ■

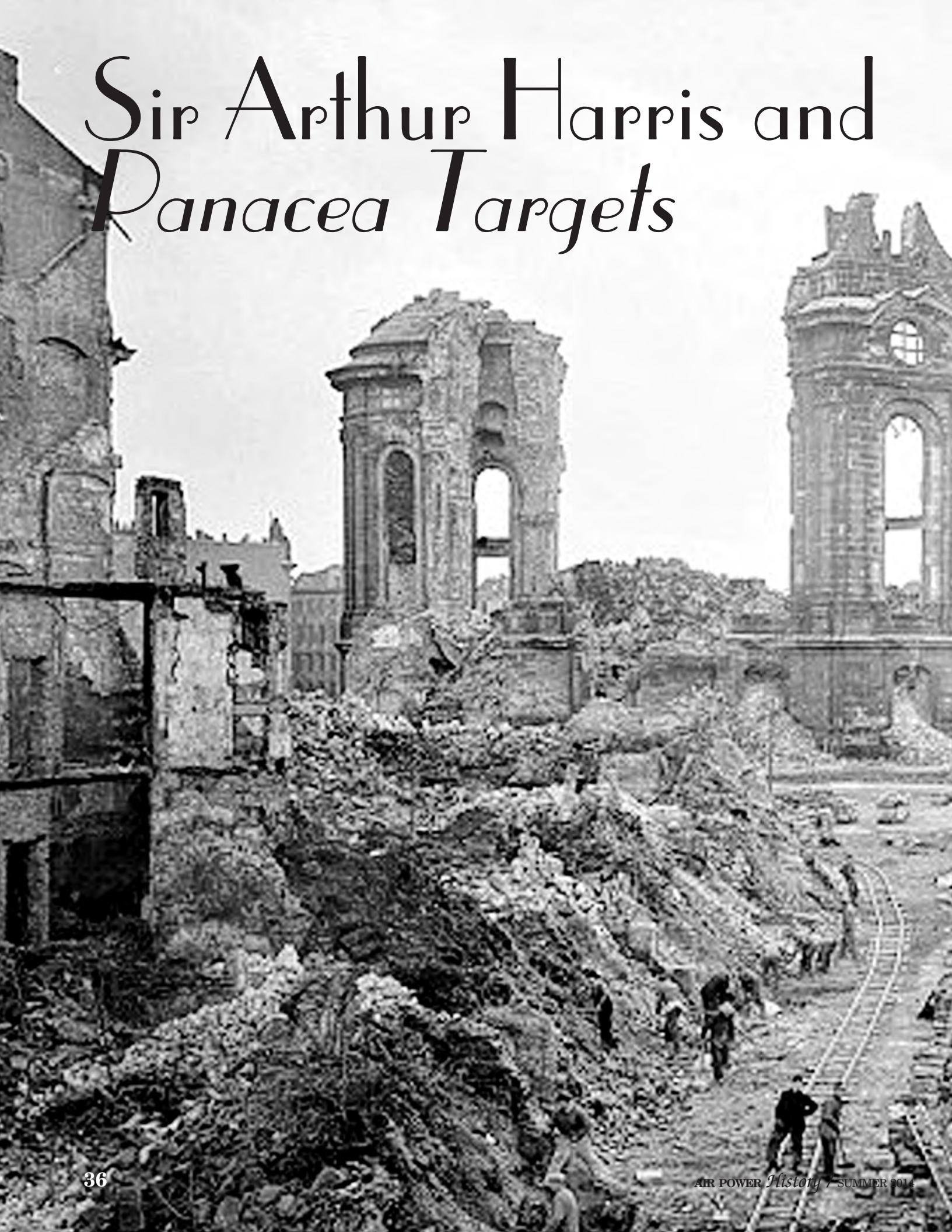
NOTES

1. Details of all aircraft referred to in this article are available in Wikipedia and other internet sites. For those dependent on libraries stocked before the internet era, John W.R. Taylor ed. *Combat Aircraft of the World* (London 1969) is still probably the best single-volume guide.
2. Taylor, *Combat Aircraft of the World*, p. 58, Yefim Gordon and Keith Dexter, *Polkarpov's I-16 Fighters: Its Forerunners and Progeny*, (Hinckley 2001) p. 66 says that the Bf 109B was superior to the standard I-16 type 10 above 3000 metres, though most air fighting in Spain was below that height, and that I-16's fitted with a Wright Cyclone R-1820 F-24 motors, had the better performance even above 3000 metres.
3. Martin Caidin, *Me 109: Willy Messerschmitt's Peerless Fighter* (London 1969) p. 40.
4. The National Archives, Kew, AVIA 6/2394 Royal Aircraft Establishment, Farnborough: Report No. B. A. 1640, 'Messerschmitt Me. 109 Handling and Manoeuvrability Tests Sept. 1940', pp. 1, 2, 12-13, 25, 28.
5. See e.g. Bernhardt L Mortensen, 'Rabaul and Cape Gloucester', in Welsey Frank Craven and James Lea Cate, eds. *The Army Air Forces in World War II* (7 vols. Chicago 1951), vol. 4 pp. 311-56, at p. 320, and Frank Farrell's chapter 'Mindoro', pp. 390-412 in the same volume. For Japanese anti-aircraft defences see The National Archives, Kew, AIR 23/2414 (duplicated in AIR 23/4951 and WO 208/1553), 'Japanese AA Defences Experienced in Burma', espec. p. 7 and AIR 40/2177, HQ Allied Air Forces, Flakintel Bulletin No. 41, 18 January 1945, 'Japanese AA Defense Tactics at Clark Field', p. 1. Eighty per-cent of Japanese light A.A. consisted of Type 98 20 mm cannon firing at 120 r. p. m., less than half the rate of fire of the 20 mm Oerlikon.
6. Michael O'Leary, 'Database Douglas Invader', *Aeroplane*, vol. 30 no. 5 (May 2002) p. 37-58, at p. 42. General George Kenney commanding Allied Air Forces South West Pacific Area did not mince his words: 'We do not want the A-26 under any circumstances as a replacement for anything.' The USAF was still using the A-26 in Vietnam two decades later.
7. The present author is currently engaged on a study of the medium bomber in the Second World War,

which he hopes to publish in two years' time.

8. David Baker, *Messerschmitt Me 262* (Marlborough 1997) p. 138.
9. Graham Simons, *Northrop Flying Wings* (Barnsley 2013) pp. 11-12.
10. Simons, *Northrop Flying Wings*, pp. 17, 27, 30-31, 35, 45-47, 50, 59-60.
11. The National Archives, AVIA 15/193, 'Tail-less Aircraft Advisory Committee': 20th Meeting 19 Oct. 1945, p. 11. Heinz Scheidhauer continued his association with Horten after the war, piloting a Horten Ho XIVc glider over the Andes in 1955 to become the first man to fly over the South American Cordillera in a glider.
12. The National Archives, AVIA 61/10878 R.A.E Technical Note No. Aero 1765 'Brief notes on possible policy with regard to research and development on swept wings', by M.B. Morgan, M.A., F.R. Ae. S., February 1946, and see also AVIA 61/10821, R.A.E. Tech. Note No. Aero. 1706, 'German Research on Swept-back Aerofoils', by M. Gdaliahu, Licencié ès Sc. (Aspect ratio is the ratio between the wing span and the distance the leading and the trailing edge.)
13. www.wikipedia.com Junkers Ju 287.
14. The National Archives, AVIA 61/10443, Royal Aircraft Establishment, Farnborough Tech. Note No. Aero. 1324, November 1943, 'Comments on design of a tailless glider with swept forward wing.' See also AVIA 15/1939 'Aerodynamics Sub-Committee. Aeronautical Research Committee' Ae 2302, 25 Aug. 1943.
15. Jeffrey Ethell and Alfred Price, *The German Jets in Combat* (London 1979) pp. 79, 93, 95-6.
16. The National Archives, AVIA 6/9021, Fig. 3 and AVIA 6/9213, p. 1. These files are duplicated in The National Archives, DSIR 23/15079 and DSIR 23/14751.
17. The post-war cult of Napoleon was a Europe-wide phenomenon: see A.D. Harvey, 'Napoleon: the Myth', *History Today* vol. 48 No. 1 January 1998, p. 27-32. British admirers like Hazlitt and Trelawny, though supposedly on the liberal side in politics, now seem to have something about them reminiscent of prominent socialists in France and Belgium who rallied to Hitler's cause in 1940.

Sir Arthur Harris and *Panacea Targets*





A.D. Harvey

(Overleaf) The results of one of the most destructive bomber attacks of the war on Dresden, Germany.

Air Chief Marshal Sir Arthur Harris, who was at the head of Royal Air Force Bomber Command from 1942 to 1945, was famously fond of making disparaging remarks about what he called *panacea targets*, that is, targets for bombing attacks which so-called experts claimed would bring the German war economy grinding to a halt if knocked out. The letter printed below, to Air Marshal Norman Bottomley, Deputy Chief of Air Staff, is the fullest statement of his views on the subject.¹ The first two paragraphs have been published previously, in Dudley Saward, "*Bomber Harris: The Story of Marshal of the Royal Air Force Sir Arthur Harris.... Air Officer Commanding-in-Chief, Bomber Command, 1942 - 1945* (paperback edition London 1985) p. 298 and parts of paragraphs 7 and 9 appeared in Charles Webster and Noble Frankland *The Strategic Air Offensive Against Germany, 1939 - 1945* (4 vols. London 1961) vol. 2 p. 66-67, but the complete text is worth reading in its entirety as an eloquent critique of the mindset which with its unjustified pre-assumptions and over-ambitious conclusions has bedeviled air warfare since its inception a century ago: the fact that in this instance Harris was almost certainly wrong does not detract from the accuracy of his general analysis.

Before the outbreak of World War II in 1939, Germany imported 65 percent of its oil requirements, 50 percent of total requirements from outside Europe. Fourteen Bergius and Fischer-Tropsch synthetic oil plants were operating, and an additional six were under construction, and more than a million tons of natural crude were being produced from domestic sources, much of it in the recently annexed territory of Austria.² The cutting off of imports from overseas by the British maritime blockade was initially made up for by imports from the Soviet Union following the Molotov-Ribbentrop agreement 1939, but the invasion of the Soviet Union in June 1941 threw the Germans back on supply from Romania. In the event, prior to the commencement of a systematic Allied campaign against synthetic oil targets in May 1944, and the Soviet overrunning of Romania later that summer, imports and domestic supply fell short of consumption only in 1941.³ Nevertheless, Germany's oil situation was always very tight, and the operations of the German and Italian navies (the latter dependent on supply from, or permitted by, Germany) was significantly curtailed by fuel shortages: the Italian navy, having entered the war with a reserve of 1.8 million metric tons of fuel oil, estimated monthly requirements at 200,000 tons but by the first quarter of 1943 could operate only at a level of 24,000 tons a month.⁴

As early as March 1940, the British War Cabinet authorized sending a Royal Engineers field

company, about 200 men, from Alexandria, possibly via Turkey, to blow up oil wells in Romania.⁵ Covering large areas of ground and more than averagely combustible, oil installations were of course eminently suitable targets for air attack, and it might be noted that the only sustained strategic bombing campaign carried out by the Italian *Regia Aeronautica* was against oil targets.⁶ Romania's oil installations were of course out of range for the British and Americans for the first half of World War II, and the heavy losses suffered by the USAAF flying from Libya to bomb Ploesti on August 1, 1943 discouraged repetition of the experiment. Oil targets in Germany were of course much nearer to Allied bases. An Air Staff directive of September 21, 1940 described attacks on German oil installations as "the basis of our longer term offensive strategy," and a directive of January 15, 1941 specified the destruction of seventeen German synthetic oil plants as the "sole primary aim" of RAF Bomber Command.⁷

At this stage (months before Harris became head of Bomber Command) the RAF simply lacked the technical and quantitative means to carry out this task effectively, but later, because of Harris's insistence that the destruction of German urban centers was the most worthwhile objective, it was not until mid-1944 that the RAF began to bomb oil targets in any strength, and not till January 1945 that RAF bomb loads directed at oil targets began to exceed those of the USAAF.⁸ By this stage the war was practically won anyway: Germany had more or less run out of territory to fight on, and trained manpower to fight with. Oil did not represent the only strategic bottleneck in the German war economy, but it was certainly the most vulnerable one. Even the RAF's Chief of Air Staff, Sir Charles Portal, admitted the impossibility of starving Germany of ball bearings, and felt obliged to recommend "direct action by means of acts of sabotage" to cut off supplies from neutral Sweden.⁹

The war in the Far East demonstrated that it was indeed possible to paralyze the war economy of an enemy country by attacking a strategic bottleneck. The destruction of the Japanese merchant navy and the resultant elimination of imports of raw materials probably contributed more to bringing Japan to its knees than the firebombing of Japanese industrial centers: the *United States Strategic Bombing Survey* remarked that "Japan's economy was in large measure being destroyed twice over, once by cutting off of imports, and secondly by air attack," but even if Japan's factories had not been attacked they would have run out of raw materials, and the workers would have been too starved to work.¹⁰ Indeed it is arguable that the use of Boeing B-29 bombers to lay mines from the air was a far more cost-effective employment of these

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aircraft than sending them to bomb urban centers. If this is so, the U.S. Twentieth Air Force's bombing campaign against Japan was quite as inconsistent with the principle of economy of means as the combined bombing offensive against Germany: or, as Sir

Arthur Harris might have said, yet another example of the experts making a hash of it. The fact that he was mistaken in his personal choice of strategy does not refute his claim that experts were generally wrong. ■

Verbatim copy of letter from Sir Arthur Harris to Air Marshal Norman Bottomley

Copy

PERSONAL & MOST SECRET

BC/S. 28302/DO/C.-in-C

Headquarters,
Bomber Command,
High Wycombe,
Bucks.

20th December, 1943

Your letter S.46368/TV/DCAS, dated 17th December 1943

I do not regard a night attack on Schweinfurt as a reasonable operation of war. The town is in the very centre – by any angle of approach – of the most highly defended part of Germany. It is extremely small and difficult to find. It is heavily defended, including smoke-screens. In these circumstances it might need up to six or seven full-scale attacks before a satisfactory result was secured on the town as a whole. Even then the chances of individual factories being written off are dubious.

In consequence, as I have repeatedly stated, if Schweinfurt is as important as it is alleged to be, it is pre-eminently a job for the U.S. Bomber Command rather than for us.

2. I still have only 6 H2X aircraft, [i.e. aircraft equipped with H2X (or H2S) high definition radar giving an image of the ground below the aircraft.] of which only a proportion are serviceable at any given time, and a still smaller portion remain operationally serviceable by the time they reach the target: In any full-scale attack on a target of that size only a small proportion of the attack can be expected to get into the target area, even if the attack is "on" at all. After the H2X aircraft have put down their markers the first wave of the main force obliterates the surroundings in a cloud of high explosive and incendiary smoke. It is our invariable experience that thereafter the attack tends to spread in all directions, but mainly in the direction of our approach. For these reasons there can be no less economic operation of war than an attack on a small target at night.

3. Apart from the advisability of this attack as an operation of war I have, as you know, strong views on the subject of "Panacea" targets. These are already known to you but I will give you some examples.

The claims as to the actual percentage of Germany's ball-bearing supply manufactured in Schweinfurt have always been exaggerated and have been progressively reduced, even by their authors. At this stage of the war I am confident that the Germans have long ago made every possible effort to disperse so vital a production. Therefore even if Schweinfurt is entirely destroyed I remain confident that we shall hear no more of the disastrous effects on German war production now so confidently prophesied. I am supported in this contention by an unending series of previous examples with "Panacea" targets.

4. Had we claimed two years ago to have been able to do half the damage to the German railway system and rolling stock that has since been done, I have not the least doubt that the "Panacea" mongers would have claimed such a scale of damage as lethal to the entire internal communication system of Germany.

Nevertheless, these people go out of their way in their reports now to point out that everything we have done to German transportation is ineffective because the destruction to industry has so reduced the demands on the railways that the railways have now plenty and to spare for dealing with what remains! This is a statement which in various guises occurs again and again in M.E.W. [Ministry of Economic Warfare] reports.

5. For years we have been told that the destruction of the Moehne Dam alone would be a vital blow to Germany. Both the Moehne and Eder dams were destroyed and I have seen nothing either in the present circumstances of Germany or in M.E.W. reports, to show the effort was worthwhile except as a spectacular operation.

6. We were repeatedly pressed to destroy the molybdenum mine at Knaben, the sole source of any ponderable supplies of that metal to the enemy. This again was going to be a vital blow. We destroyed the mine, and just lately, since it was repaired, the U.S VIII Bomber Command have destroyed it again. There is no evidence that the German war machine has even been discommoded. We are told that the Boche has merely reverted to the use of an alternative commodity.

7. We spent many months, indeed the best part of a year, in attempting to destroy German synthetic petrol sources on the assurance that the German fuel situation was utterly precarious. On top of that assurance the Germans opened and waged the most extensive war of movement in Russia that the world has ever seen. In that campaign they used billions and billions of gallons of fuel which according to the "Oily Boys", they never even possessed. That obvious refutation of their claims by no means brought the "Oily Boys" to despair. Their reaction was simply this: That the vast and unpredicted extra consumption of fuel for the Russian campaign had made the shortage still more acute and the necessity of blotting out oil plants still more urgent. Hence the ridiculous venture of Ploesti, [i.e. the attack on the Ploesti refineries by 177 U.S.A.A.F. B-24's flying from Benghazi on 1 August 1943] which achieved nothing except to jeopardise and indeed ruin the American air offensive over Germany proper this summer.

8. We were told it was a vital matter to destroy the Modane marshalling yards. We did so. Everybody knows that railway lines themselves are indestructible, and that a single line was soon working through the Modane route. It would be a double line but for the damage in the tunnel caused by saboteurs. We are now told that the Modane marshalling yards are apparently empty, the line is working and that the requisite marshalling is being done further back in France. So much for the "vital" marshalling yard.

9. In the light of the above examples of the infallible fallibility of “Panacea” mongers and parochial experts, you must excuse me if I have become cynical with regard to the continual diversions of the bomber effort from its legitimate role in which, as we all know, it has inflicted the most grievous and intolerable damage to Germany. In fact I am completely convinced, while not denying that the claims of the “Panacea” mongers are put in good enough faith, that the continual stressing of targets which necessarily remove bombing pressure from the German nation as a whole to concentrate on objectives such as the above (and, as further instance, such as “Crossbow” sites) [i.e. launch sites for V-1 flying bombs], is in many cases a deliberately engineered A.R.P. [Air Raid Precaution] manoeuvre initiated by the enemy sources. Some dispersions are eagerly, if innocently, swallowed, by those many people who like to have a finger in the bomber pie when it comes to direction or misdirection of the Bomber Offensive, while having no responsibility for it whatever as a military operation or in regard to its possible failure as major part of our strategical purpose. It may indeed well fail if these perpetual diversions are not curbed to the utmost possible limit.

10. We cannot afford to lose any favourable opportunity of hitting Germany hard, particularly at the present time, and half a dozen attempts on Schweinfurt would probably mean the loss of at least three successful full scale attacks on worth-while targets. We have only four months left [i.e. before D-Day].

In these circumstances any attack by us on Schweinfurt must at least await not only particularly favourable circumstances, but, in addition, the acquisition of many more H2X aircraft. Even then, for reasons, I have given above, I do not regard it as a reasonable operation of war for night bombers. If it takes us three attempts under favourable conditions to hit Hanover once, and three in favourable conditions to hit Kassel once, I am satisfied it would take us at least half a dozen before we hit Schweinfurt at all. I therefore represent that if the job is vital, and most emphatically I do not believe it is, then the VIII Bomber Command should have another cut at it. If they can set the place alight in daylight, then we may have some reasonable chance of hitting it in the dark on the same night. Otherwise, I’m not prepared to take it on.

(Sgd) A.T. Harris
Air Chief Marshal.

The National Archives, Kew, London AIR 20/3239

NOTES

1. See also the Harris’s letter to Marshal of the Royal Air Force Lord Trenchard, April 14, 1943 in the Trenchard Papers, R.A.F. Museum, Hendon London, quoted in Henry Probert, *Bomber Harris: His Life and Times: the Biography of Marshal of the Royal Air Force Sir Arthur Harris, the Wartime Chief of Bomber Command* (London 2001) p. 257: ‘I do not believe in “panacea targets”, e.g. oil, rubber, ball bearings....If the “panacea” fails all is lost’.
2. Burton H. Klein, *Germany’s Economic Preparations for War* (Cambridge, Mass.1959) pp. 40, 51 and The Effects of Strategic Bombing on the German War Economy, p. 75, & p. 77 Table 39 in David McIsaac ed. *The United States Strategic Bombing Survey* (10 vols. New York 1976) vol.1.
3. ‘The Effects of Strategic Bombing on the German War Economy’ p.77 table 39 and ‘Oil Division, Final Report (European Report #109)’ figures 15 and 16 after p.20, in McIsaac, *United States Strategic Bombing Survey* vol.5.
4. Vincent O Hara, *The German Fleet at War: 1939 - 1945* (Annapolis 2004) p.128 and Marc’Antonio Braga - din, *Il Dramma della Marina Italiana: 1940 - 1945*

(Milan 1969 edit.) p. 6.

5. The National Archives, Kew, ADM 116/4269.

6. See A. D. Harvey, ‘The Bomber Offensive That Never Took Off: Italy’s Regia Aeronautica in 1940’ , *RUSI Journal* vol.154 no.6 (December 2009) p.96 -102, at p.99 - 100 for the Italian raids on oil installations at Haifa.

7. Charles Webster and Noble Frankland, *The Strategic Air Offensive Against Germany, 1939 - 1945* (4 vols. London 1961) vol. 1, p. 153, vol. 4, pp .126,132.

8. ‘Oil Division Final Report’ p. 122.

9. The National Archives, Kew, London, AIR 20/3239 Note by Chief of Air Staff to Chiefs of Staff, ‘Export of Swedish Ball Bearings to Germany’, p.9.

10. Summary Report (Pacific Report #1) p. 19 in McIsaac, *United States Strategic Bombing Survey* vol.7, and Jerome Cohen, *Japan’s Economy in War and Reconstruction* (Minneapolis 1949) p. 106 - 10. The idea that a nation’s economy might be attacked at a single point with devastating results goes back till at least the seventeenth century: see A. D. Harvey, *Body Politic: Political Metaphor and Political Violence* (Newcastle 2007) p.83 - 98.

Grounded: The Case for Abolishing the United States Air Force. By Robert M. Farley. Lexington: University of Kentucky Press, 2014. Photographs. Notes. Bibliography. Index. Pp. 264. \$26.95 ISBN: 978-0-8131-4495-5.

It isn't often that a scholar steps in with half an argument to debate the utility of a military service, but that is what happens in Robert Farley's book. As an assistant professor at the University of Kentucky, Farley has pursued the abolishment of the Air Force via blogs and interviews for nearly a decade, culminating in this book. Unfortunately, he fails to make the case for why an independent U.S. Air Force has capably provided airpower for the nation and offers to abolish it only on its failure to prove the claim of independent decisiveness.

Farley believes that the only reason for an independent Air Force is decisive effect. He further believes the Air Force's failure to have decisive effect makes independence unnecessary and distracts from its support role. "If an air force cannot provide independent decisive effect, and instead exists only to support other services in their aims, then it becomes harder to justify the organization's independent existence." This line of argument, while provocative, fails to recognize independent contributions made by the Air Force over the past six decades.

You don't have to know history to have an opinion, but history should help inform that opinion. Had Farley recognized how the Air Force has adapted since 1947, particularly since the end of the Cold War, he might have had a different conclusion. After a few chapters reviewing Clausewitz and Air Force culture, Farley tells his story of the Air Force. Farley follows the path to independence for the Royal Air Force and the U.S. Air Force and the basis for each and then provides historical examples since 1947. He looks at the contribution of air power in limited wars from Korea through to Libya with varying degrees of assessment of each. He highlights debates on air power's true contribution to victory in Desert Storm and almost seems to recognize the effect of air power in Libya and Afghanistan. Unfortunately, Farley falls short of seeing the value of a modern, independent Air Force in his assessment.

After a twenty-page drone-warfare chapter, Farley provides his way ahead for the U.S. Air Force by comparing air power organizations in the Soviet Union and Israel. He makes specific recommendations for which functions of the Air Force would land in either the Army or the Navy after it is abolished. Finally, Farley wraps

up with a description of Canada's ability to reform its armed forces by combining the services into a single organization and how this might be the way ahead for the U.S. military.

The book is provocative but reads like a series of blog posts that fail to make a case. If Farley had investigated and made a case against the value of an independent Air Force instead of just chasing decisive effect it might have been useful to the national security dialogue. Unfortunately, the book demonstrates how poorly America understands its Air Force's role in national security after a decade of counterinsurgency, and Farley is clearly a victim of this era's one-sided national security viewpoint.

Lt. Col. Tom Cooper, USAF, HQ USAF, Pentagon



The Missile Next Door: The Minuteman in the American Heartland. By Gretchen Heefner. Cambridge Mass.: Harvard University Press, 2012. Photographs. Abbreviations. Notes. Index. Pp. vi, 294. \$35.00 ISBN: 978-0-674-05611-5

In the last six decades, more than three dozen books about U.S. long-range ballistic missiles have been published. From Mel Hunter's *The Missilemen* (1960) and Roy Neal's *Ace in the Hole* (1962) to Jacob Neufeld's *The Development of Ballistic Missiles in the United States Air Force* (1990), and David Spires's *On Alert* (2012), nearly all have dealt with acquisition and fielding of the missiles themselves or with the crews assigned to maintain and operate them. Only antinuclear activist Samuel Day's *Nuclear Heartland* (1988), primarily a guide to the location of all U.S. intercontinental ballistic missile (ICBM) sites, purposefully shifted readers' attention to how the actual presence of ICBMs affected nearby civilian landowners and laborers.

Heefner's *The Missile Next Door* sheds considerably more light on this latter, largely neglected aspect of U.S. missile history. Reaching across scholarly disciplines, she makes three broad, overlapping arguments: local response to the national security state does matter; the Minuteman ICBM helped Americans embrace the arms race as a legitimate means of waging war; and tracing the Minuteman system's history, from cradle to grave, provides a distinctive lens on what President Dwight Eisenhower called the military-industrial complex. She asserts, "The Minutemen were the result of a particular path taken, of choices made, of biases left unques-

tioned, and of a healthy dose of group-think." She admits her skepticism about many of those choices.

Exhibiting a sophisticated understanding of people on the Great Plains, Heefner uses their relationship with the Minuteman fields of South Dakota as a case study. She also places it in the broader geographical, economic, political, social, cultural, and environmental context of the American West. After exploring some landowners' motivation to resist emplacement of ICBMs on their property and why resistance failed, she delves into how the Air Force's aggressive public relations campaign of the early 1960s effectively "sold" deployment of the Minuteman to Congress and the American people. She finds the resurgence of largely unreported, unsuccessful anti-ICBM protests on the Great Plains during the late 1970s and early 1980s historically important for three reasons: it complicates the story of the antinuclear movement; it undermines the standard story of conservative ascendancy in the rural West; and it suggests new ways of thinking about modern agrarian politics. Ultimately, of course, the collapse of the Soviet Union and the end of the Cold War brought about removal of the Minuteman II missiles. Even then, some landowners struggled for years to recover property taken decades earlier by the government for purposes of national defense.

Heefner plumbed a wide variety of sources to produce *The Missile Next Door*. In addition to consulting a raft of scholarly books and journals, she poured through local and national newspapers, popular magazines, and websites. Government archives provided primary documents and oral history transcripts. Her own interviews and correspondence with knowledgeable participants added an otherwise unobtainable depth and richness to her narrative.

Unlike so many tomes written by academic historians, *The Missile Next Door* is remarkably easy to read. Regardless of whether one agrees with Heefner's interpretation of Minuteman history, she deserves plaudits for telling a significant tale in an intelligible way and, thereby, opening the subject for further scrutiny by future scholars. Her book should be on every American historian's bookshelf if, for no other reason, than it exemplifies, both stylistically and substantively, excellent historical narration.

Dr. Rick W. Sturdevant, Deputy Director of History, HQ Air Force Space Command



Command and Control: Nuclear Weapons, the Damascus Incident, and the Illusion of Safety. By Eric Schlosser. New York: The Penguin Press, 2013. Illustrations. Photographs. Notes. Glossary. Bibliography. Index. Pp. xxiii, 632. \$36.00 ISBN: 978-1-59420-227-8

Eric Schlosser is an investigative journalist who was educated as an historian at Princeton and Oxford. Though he never served in the military and, twenty years ago, probably didn't know which end of a Titan missile the fire came out of, he demonstrates a better understanding of the overall nuclear enterprise in this country than most officers who ever served in the Strategic Air Command (SAC).

What Schlosser does in this book is present a superb history of nuclear weapons from the beginning through today. His twenty-page synopsis of the Manhattan Project, culminating in the August 1945 attacks on Japan, is as fine a description of this effort as I've ever read. Having just participated at a leading U.S. university in the development of an on-line course on the advent of the atomic bomb, I particularly appreciated Schlosser's presentation on this subject. But the thrust of this work deals with the safety and command and control of nuclear weapons which, of course, cannot be discussed without addressing how they would be used—deterrence and attack.

The central story of the book—and there are many intertwined stories—is the September 1980 incident at Launch Complex 374-7 near Damascus, Arkansas, when its Titan II missile blew up and tossed debris around the area and the W-53 thermonuclear warhead into a local ditch. I say "central story," because the reader views this major nuclear incident in many segments interrupted by the other stories that make up the whole picture: weapons incidents, safety and design issues, the Single Integrated Operational Plan (SIOP), the Worldwide Military Command and Control System (WWMCCS), political and inter-service issues and intrigues, Permissive Action Links (PAL), real-world conflicts and geopolitical relations, bombers, submarines, the Strategic Air Command (SAC), and on and on. Throughout the book, however, the subtle message is that the nuclear enterprise is, above all else, people. So Schlosser gives the reader not only the hardware, technology, and geopolitics, but also backgrounds of individuals involved: Generals LeMay and White, U.S. Presidents, maintenance troops, combat crews, Governor Clinton, wing commanders, and many others. That's a lot to cram into one book, but Schlosser pulls it off admirably.

How he did it is through the hallmark of any great investigative journalist. He dug for facts by interviewing dozens of participants (scientists, politicians, generals, enlisted men, engineers, and government officials); using every primary source he could get hold of off-the-shelf or through liberal use of the Freedom of Information Act (FOIA); and reading articles, books, journals, reports, and other secondary sources on the subject. And, most importantly, he cross-checked and double checked what he discovered. I found his ten-page Note on Sources almost as fascinating as the story he presents in the body of the text.

As great a work as this book is, however, it has one major drawback—and it's not the fault of Schlosser. When publishers started getting lazy and changed footnotes into endnotes, that was bad enough. But Penguin has taken this impediment to another level. There is not a single endnote number in the entire text. Instead, one has to engage in a perpetual "guess-and-hunt" exercise. You, the reader, have to guess whether the author included some extra information and then go find it! All of the superb additional information provided in the eighty-two pages of small-print endnotes—and there is a lot of it—is in this form: "345 [page number] *Someone hadn't put a filter inside the oxidizer line: See [article] . . .*" "345 *someone may have deliberately omitted the filter: According to Jeff . . .*" This lunacy would be complete if they'd gone ahead and printed the endnotes in invisible ink! I hope this isn't a portent of the future of book publishing.

Despite this horrendous drawback, Schlosser has turned out a book that should be read by everyone who ever served in SAC; sat alert in an F-105 in NATO; sailed on a Boomer; or took a nuclear mine, artillery shell, anti-aircraft missile, or a Davy Crockett into the field. In fact, I really believe that every American who has any interest in his government, defense, safety, or tax dollar should read it. This country is now, or should be, engaged in a great debate over the future of its nuclear weapons, their use, and how they play in the greater geopolitical picture. Schlosser has done the tough job—and done it admirably—of providing the American people with a well-researched and well-analyzed background against which to frame the debate.

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

NASM Mission AS-508 Apollo 13 1970 (including Saturn V, CM-109, SM-109, LM-7) Owners' Workshop Manual: An Engineering Insight into How NASA Saved the Crew of the Failed Moon Mission. By David Baker. Minneapolis Minn.: Zenith Press, 2013. Tables. Diagrams. Illustrations. Photographs. Appendices. Glossary. Index. Pp. 204. \$28.00 ISBN: 978-0-7603-4619-8

Once couldn't ask for a better matchup of author and topic. Dr. David Baker worked for NASA from 1965-1990 and was in the control room during much of the saga of Apollo 13. His job was to work on the management of consumables necessary to get the crew back. After the mission, he conducted analyses of mission failure-mode mitigation that led to new analytical tools for risk analysis.

Probably everyone has seen the movie *Apollo 13* or read books and articles written about the mission to the Moon that had the entire world spellbound. Therefore, everyone knows that the story has a happy ending. But, as with the movie, I was still riveted to Baker's description of the events, analyses, decision making, and solutions that transpired during the six-day mission.

A word of caution is necessary: if a lot of technical data and engineering descriptions make you squeamish (we're not talking second-order differential equations here, but the book is heavy in numbers and units of measurement), or if tons of acronyms make you break out in a rash, then this book probably isn't one you want to tackle. But, if you want to understand the complexities of the Apollo vehicle and mission and how a vast technical and management structure interacted to pull off a mission, then this is definitely the book to read.

One thing that I picked up throughout the story was how the popular Tom Hanks movie was just a bit "Hollywoodized." Unquestionably, it is difficult to cram six days of hectic activity into two hours on the big screen. But the compression of the story and the necessity to keep a general audience on the edge of their seats drove some of the scenes to be a bit inaccurate. Several times in the movie, where Mission Control is working to come up with solutions, the statement is made to the effect that "this is something we've never tried before or even thought about before." It turns out that there had been studies about using the Lunar Module as a lifeboat and firing the descent engine to make course corrections or do things other than what it was designed to do (recall that there was a bit of tension in the movie between the Grumman rep and Gene

Kranz over this issue). Overall, though, the movie is still a very good depiction of the mission; but this book tells the real story.

I think the most important thing brought out is the tremendous work done by all of the people involved. Hanks (Lovell) notes it in the movie's closing, but this is probably the most important point of the mission. It was literally thousands upon thousands of people who worked in the spacecraft, in Mission Control, in the simulators, at the NASA centers, and in the myriad contractors' facilities all over the country who got the astronauts back and—just as important—figured out what went wrong and how to make it not go wrong again.

Baker has filled the book with drawings, tables, and photos that depict how this complex craft was put together. The narrative keeps the story thread going and gives the management side of the mission, but the technically oriented reader will find about all he could possibly want to know to understand what made the 6-1/2-million pounds of an Apollo-Saturn tick.

This is a great story of an important event in man's ventures into space as told by one of the folks who was intimately involved.

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



The 147th Aero Squadron in World War I: A Training and Combat History of the "Who Said Rats" Squadron. By John Stokes Ballard and James John Parks. Atglen, Pa.: Schiffer Military History, 2013. Maps. Photographs. Notes. Appendices. Bibliography. Index. Pp. 240. \$59.99 ISBN: 978-0-7643-4400-8

Jack Ballard, the author of several books relating to military history, particularly in the western United States, finished the work started by the late James Park, a devotee of the 147th Aero Squadron who interviewed many of the surviving flyers before their passing. Park's son, Andy, executive director of the Vintage Air Museum and Lafayette Foundation of Denver, Colorado, made available to Ballard a treasure trove of letters, journals, and photographs gathered over the years. Probably the least known of the First Pursuit Group's four squadrons (the 27th, 94th, and 95th compose today's 1st Fighter Wing at Langley AFB, Virginia), the 147th nevertheless engaged in some of the most intense aerial combat encountered by United States Army Air Service

units in World War I.

The 147th began to emerge during its pilots' initial training under British guidance at bases around Toronto, Ontario. Later, the flyers moved to Fort Worth, Texas, where the unit was formally organized before shipping overseas to France in March 1918.

After gaining their confidence and skill in Curtiss JN-4 Jennys in North America, the pilots' next step involved transition training to French aircraft under French instruction. Understandably, the different approach frustrated some before they become comfortable in their first combat aircraft, the French-designed and -built Nieuport 28, and its Gnome Le Rhone 160-horsepower rotary engine. In June, the 147th entered combat for the first time. It would remain on the front lines until hostilities ceased in November.

Aside from the loss of good friends either in combat or due to operational accidents, the major impact on the squadron's time in France revolved around the unit's first commander, Maj. Geoffrey Bonnell, an American veteran who had flown in the Royal Flying Corps. According to numerous excerpts cited in the book, squadron pilots held Bonnell in high esteem. Bonnell became an outspoken critic of the group commander and also later made clear his preference for the Nieuport 28 over the more powerful SPAD XIII. Brig. Gen. William "Billy" Mitchell, commander of U.S. Army combat air assets in France, favored the SPAD. These disagreements led to Bonnell's removal. Lt. James Meisner, a successful veteran in his own right, succeeded Bonnell.

This is an exceptional work, rich in detail and photographs. The personal accounts focus on two pilots, one of whom was killed in action; but many others are included. Among them is Ralph O'Neill, who went on to start the New York, Rio and Buenos Aires Line (remembered as NYRBA) in the late 1920s. This history should well hold the interest of World War I aviation enthusiasts.

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



Flight Gear 1942-1945: U.S. Army Air Forces Aviators in Europe. By Mathieu Bianchi. Paris: Histoire & Collections, 2013. Tables. Photographs. Glossary. Bibliography. Index. Pp. 176. \$50.00 ISBN: 978-2-35250-302-6

Frenchman Mathieu Bianchi has performed a real feat to put all of the infor-

mation he collected into a very readable and useful volume on World War II USAAF flight gear. His original intent was to cover all of the gear used by Army Air Forces personnel all over the world. Realizing that may have been too large a task, he reduced the project to essentially the items used by members of the Eighth and Ninth Air Forces.

Bianchi was inspired by the old AAF Supply Class 13 illustrated catalog. His job was to put this into a guidebook format and collect the myriad pictures needed to illustrate the vast number of items used in the theater. That plus 15 years of digging through the National Archives and working with a number of private collectors resulted in what has to be described as the most thorough coverage ever of the clothing and equipment used by Eighth and Ninth Air Force crews.

The book well shows the evolution of equipment in the relatively short span of Army Air Forces operations in Europe (August 1942 – May 1945). When U.S. forces arrived in England, they brought with them equipment and clothing that had been designed in peacetime some years before. Some of it was just not up to the job of engaging in combat. So, British equipment found its way into U.S. forces. And, given the ability of the American GI to improve upon almost anything he is provided with, local modifications also entered the picture. Meanwhile, new items were being developed as rapidly as possible stateside. The result of all of this was a huge array of available equipment and types of clothing. Even after multiple viewings of some of the great movies such as *Twelve O'Clock High*, *The War Lover*, *Fighter Squadron*, *Memphis Belle* (the original one), and *Command Decision*, I would guess that most readers will be surprised at the variety of equipment used during the war. Often, in a single unit at a given time, one could see all sorts of combinations of gear in use.

Bianchi organized the book by major classes: headwear and equipment, flying clothing, protection and survival, navigation and bombing, and documents and insignia. Each of these, in turn, is broken down into smaller groupings—for example, flying clothing has sections on winter and summer flight suits, electrically heated clothing, flight jackets, anti-G suits, gloves, and boots and shoes. Almost every item described is accompanied by a picture of a surviving artifact as well as a period photo showing an airman wearing or using the item. All of the photos are beautifully reproduced on glossy paper. There's not a poor-quality wartime photo in the book.

The final chapter is a really great

twenty-six-page section devoted to one-page renderings of various crew positions. For example, there is a B-17F waist gunner heading out on furlough. There is a period photo(s), narrative, and a model dressed up in the appropriate gear with everything identified. Other pages are devoted to a P-47C pilot, B-17F mechanic, A-20J pilot, B-24 waist gunner, and so on.

For anyone who wants to know and understand what airmen in England wore and used to prosecute the Second World War, this is the book to read.

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



We Served with Honor: Memoirs of the Men Who Served the 91st Strategic Reconnaissance Wing. By Linda Rios Bromley, James F. Bard, Jr., and Frank T. Hayes. Solihull, England: Helion and Company, 2013. Photographs. Appendices. Index. Pp. 348. \$34.00 ISBN: 978-1-909384-22-4

This is the latest in a series of histories published by Helion that relate to Cold War reconnaissance, nuclear doctrine, and strategic bomber operations. An elaboration of an earlier history by the same authors (and Nancy Keeling, who is listed in the acknowledgments of this work as a reviewer), *We Served with Honor* assembles the recollections of a wide range of airmen and others, across all ranks, on the history and accomplishments of this valorous unit.

The 91st had been constituted as a bombardment group in 1942. Inactivated after the war, it was reactivated in July 1947 as the 91st Reconnaissance Group within Strategic Air Command, and then designated as the 91st Strategic Reconnaissance Wing (later, in view of its aircraft types, being redesignated again in July 1950 as the 91st SRW, Medium). For the next seven years, the 91st flew extensively on Far East Cold War reconnaissance missions using a mix of RB-29, RB-45, RB-47, and RB-50 aircraft, together with a variety of other types, including the RC-54. In that time, it lost eight aircraft to Soviet MiG and Lavochkin fighters, including six B/RB-29s, one RB-45, and one B-50. Altogether, it suffered the loss of fifty aircrew killed or missing in these shoot-downs, with others wounded and taken prisoner.

Like many such compilations, this work combines a mix of gripping anecdotes with more mundane reminiscences that capture the challenges, routine, mind-

set, and lasting memories and impressions of those who were literally "on point" during some of the darkest and most harrowing days of the Cold War. In this era of "overheads," reconnaissance drones, cyber intelligence, and sophisticated and near-ubiquitous intelligence-gathering, it is sobering to see how basic, even primitive, it was just a half-century ago, and how inured to loss the Air Force was at that time. Some of the stories are deeply moving, particularly one involving the return from the Soviet Union of a Naval Academy class ring belonging to John R. "Chute" Dunham, one of the 91st's navigators lost over the Soviet Union.

Reconnaissance history is one of the most neglected aspects of aviation history; so this work, which joins a small but valuable group of writings on other reconnaissance efforts, is both most welcome and highly recommended.

Dr. Richard P Hallion, Research Associate in Aeronautics, National Air and Space Museum



Shadow Warriors, The Untold Stories of American Special Operations During World War II. By Dick Camp. Minneapolis Minn.: Zenith Press, 2013. Maps. Illustrations. Bibliography. Index. Pp. x, 246. \$30.00 ISBN: 978-0-7603-4429-3

Col. Dick Camp, USMC (Ret), is a prolific author, having written nearly a dozen books and more than 100 articles on a myriad of Marine subjects. *Shadow Warriors* divides nicely into two parts: 1) the U.S. Marines in the European/African/Balkan Theater, and 2) the Asian/Pacific Theater with the newly formed Marine Raider Battalions in the Solomons and Marine operations supporting the OSS in China. Using primary sources from the Marine Corps University Archive and Marine Corps History Division, OSS, and CIA, as well as numerous secondary sources Camp details the exploits of these early, unconventional warriors.

Part one is the first third of this short but tightly written narrative and opens with a discussion of William Eddy, son of Presbyterian missionaries in the Levant and hero of Marine action at Belleau Wood, becoming the Naval Attaché Cairo. It is followed by William Donovan's mission in North Africa of organizing guerilla activities and ultimately supporting Operation Torch. From North Africa, Camp takes the action to the Balkans and the complex relationship between the British-supported partisans of Tito and

the American-supported Chetniks of Mikhailovich. Camp does an excellent job of depicting the tortuous relationship between the Allies in this often forgotten corner of the war in Europe. Also discussed are Marine participants in OSS operations in France with the Maquisards and supporting the invasion of Southern France.

In the second part, Camp starts with Marine Raider actions on Gavutu-Tanambogo and Tulagi. Here he makes excellent use of first-person interviews with surviving Japanese soldiers, sailors, and airmen to illustrate how and why the actions evolved as they did. The Marines' difficulties in maneuvering in an environment for which they were not well prepared are detailed. The scene then shifts to Guadalcanal and the heroic stand at Edson's Ridge, thought by many to be the defining action of the fight for Guadalcanal. Following Guadalcanal, the Makin raid is covered in detail. Included is a discussion of the somewhat controversial actions of Lt. Col. Evans Carlson's decision to surrender. Finally, the demonstration in strength as a diversionary action on Choiseul Island led by Lt. Col. Victor Krulak is presented in depth.

Part two adds interesting and little known activity by two Marines, Capt. Frank Ferrell and Walter Mansfield. Ferrell, after service with Edson on Guadalcanal, was seconded to the OSS and sent to China, where after the Japanese surrender Ferrell and his team identified and captured twenty-seven German spies who supplied the Japanese with intelligence, including information on Navy positions during the Okinawa invasion following the surrender of Germany. Mansfield and his team parachuted into China following the Japanese surrender and evacuated Allied POWs, including General Wainwright.

Camp's stories keep the reader engaged and interested, with reflections and comments from the leading protagonist and amplifying vignettes expanding on a particular item. There are a few minor technical errors with unit designations and such, but they do not detract greatly. This book is an excellent read for anyone interested in Marine special operators in World War II.

MSgt. Al Mongeon, USAF (Ret), Florida



Fighting Hitler's Jets: The Extraordinary Story of the American Airmen Who Beat the Luftwaffe and Defeated Nazi Germany. By Robert F. Dorr. Minneapolis Minn.: Zenith, 2013. Photographs. Notes. Appendices. Biblio-

graphy. Index. Pp. 298. \$30.00 ISBN: 978-0-7603-4398-2

Deployed late and in small quantities, the Me 262, Me 163, Ar 234, He 162, and other jet and rocket aircraft in the *Luftwaffe's* ranks in 1944 demonstrated a potential to alter the course of aerial warfare. Quick work by Allied air forces' units provided the strategies and tactics needed to blunt the new weapons' edge. Understandably, these aircraft are irresistible research topics and, accordingly, have been well covered from a technical and design perspective. But what of the people involved in the fight? What about dealing with an enemy whose weapons yield a seemingly asymmetric advantage? How does the fighter pilot, squadron or group leader, or senior leadership react and adjust to effectively deal with unforeseen and novel developments? What qualities, inclinations, inherent skills, and motivations go into an individual who successfully conquers these issues?

This timely and welcome book plugs a gap in historiography of the jet war over Europe, focusing foremost on the pilots, designers, engineers, and leaders involved on both sides. The backgrounds, training, experiences, and thoughts of the American airmen yield insights into the life and motivations of fighter pilots. A primary theme is to communicate to the reader an understanding the essence of a fighter pilot. Yet, beyond the title, Dorr covers enemy pilots and jet designers, engineers, and manufacturers. These jets were a revolution, not an evolution. Their development, manufacture, and fielding (as imperfect as that was) were extraordinary achievements. Here, too, the book tries to impart some sense of what set apart these designers and engineers as they turned out a plethora of designs that postwar designers plumbled for years.

Dorr effectively frames the narrative by beginning and ending the book with two meaningful airshows, both of which featured jets. The first, staged for Hitler in November 1943, was intended to introduce him to the new weapons and signaled the opening of a new chapter in aerial warfare. The second, given by the U.S.AAF right after the war, demonstrated the jet threat beaten back by the Allies with piston-engine fighters.

Fighting Hitler's Jets is written in a pleasingly conversational tone. After reading this book, I felt as though I had spent time hangar flying with fighter pilots. Dorr recaptures the urgency of a time when the enemy was thought capable of anything, and the enemy itself thought it could still win the war. He emphasizes this point by covering enemy technical innova-

tions that never reached production and notes that, decades after the war, media coverage continues to conjure inventions and capabilities that would surprise even the Nazis.

New photos provided by interviewees provide fresh context to the narrative. Most planes discussed are pictured. Dorr's footnotes are, however, disappointingly scanty—they just are on key quotes and are not keyed to pages or chapters. I could not find many things I wanted to look up. It appears as though some original source documentation was used; a monograph is cited at one point but this does not appear in the bibliography. Some typographical errors and paragraph transpositions which should have been caught in the editing stages marred my, admittedly, early reviewer's copy of the book. Hopefully those will be eliminated in later printings. A map or two laying out the locations of interest cited in the book would have been welcome. Nonetheless this book is highly recommended for those seeking a fresh perspective on the air war in Europe.

Steve Agoratus, Hamilton, New Jersey.



SR-71: The Complete Illustrated History of the Blackbird, the World's Highest, Fastest Plane. By Col. Richard A. Graham, USAF (Ret.). Minneapolis, Minn.: Zenith Press, 2013. Maps. Tables. Diagrams. Photographs. Appendices. Glossary. Index. Pp. 192. \$35.00 ISBN: 978-0-7603-4327-2

This is Graham's fourth book about the SR-71 Blackbird; it would be difficult to find an SR-71 crew member with better qualifications for producing such a series. A significant portion of his Air Force career was spent as a member of the SR-71 community, serving in just about every duty position associated with the airplane: pilot, instructor pilot, director of program integration at the Pentagon, and commander at both the squadron and wing levels.

In this latest work Graham tells the complete story of the SR-71—from its origins as the A-12 Oxcart program in the 1950s to its controversial retirement in the 1990s—and does so with a well-written narrative and an outstanding selection of photographs that help bring the program and its people to life.

The A-12, developed under the leadership of Kelly Johnson and the Lockheed Advanced Development Projects team (better known as the Skunk Works), was designed to replace the U-2 reconnaissance aircraft. While the U-2 was effective, the Central Intelligence Agency (CIA)

knew that advancements in Soviet surface-to-air missile (SAM) technology meant it was just a matter of time before the Soviets would be able to shoot down the U-2. The A-12, with a combination of Mach 3 cruise and an exceptionally low radar cross-section (RCS), was designed to be invulnerable to SAM attack. The low RCS would make it exceptionally difficult for Soviet radars to detect and track the airplane. And if a SAM were launched against the airplane, its speed would enable it to outrun the incoming missile.

Graham describes how the A-12 was developed and tested and explains how increasing performance requirements caused it to evolve into what became the SR-71. The book also describes the procedures for crew selection and training; how SR-71 operational concepts and basing were developed; and, in great detail, what an operational mission looked like from start to finish. In all cases the text provides a clear understanding of the subject matter, and the accompanying photos give an appreciation of the human element of the program.

One of the more interesting aspects of the SR-71 story is how the program ended. It came under the purview of the Strategic Air Command (SAC). While this seemed to make sense, because the SR-71 was, in fact, a strategic system, SAC never fully embraced the program. Rather, the command understandably focused on its primary mission: maintaining and operating two legs of the country's nuclear triad—intercontinental ballistic missiles and strategic bombers. Graham presents the case that, because strategic reconnaissance was a function performed for other customers (the intelligence community and theater combatant commanders), SAC received no direct benefit and, therefore, had little interest in allocating funds to this task. It would much rather spend money on essential upgrades to its nuclear delivery systems.

SAC's lukewarm support of the SR-71, the increasing effectiveness of U.S. reconnaissance satellites, and the inability of decision makers to recognize the unique capabilities of the SR-71 combined to bring the program to a close. Funding for the SR-71 was terminated beginning in October 1989. While there were some last-minute efforts to bring the program back in limited fashion over the next few years, the aircraft never again flew an operational mission. Graham's detailed account of the termination is excellent reading for those not familiar with the details.

When the reader first opens this book, the immediate question is whether the author would be able to produce a fourth book on the SR-71 and make it interesting

and informative without being overly repetitive. The answer is a definite “yes.” The book is a credit to Graham’s skills as a writer and his in-depth, hands-on knowledge of the subject matter. It would be a solid addition to one’s library.

*Lt. Col. Joseph Romito, U.S.A (Ret.),
Docent, National Air and Space Museum*



Patton’s Third Army in World War II: A Photographic History. By Michael Green and James D. Brown. Minneapolis Minn.: Zenith, 2013. Maps. Photographs. Appendix. Bibliography. Index. Pp. 288. \$24.99 paperback ISBN: 978-0-7603-4557-3

Many books have been written about Gen. George S. Patton, Jr., and Third Army’s exploits in Europe during World War II. As a long-time admirer of the general and his troops, I was interested in reading this latest coverage of what he and Third Army accomplished—and it is limited to the July 1944 to May 1945 period. I was also interested to see how this book covered the marriage of Third Army with Maj. Gen. Otto P. Weyland’s XIX Tactical Air Command (TAC), one of the greatest examples of ground and air cooperation in the war.

This book really offers no new insight into the operations of Third Army from its breakout from Normandy, through the capture of Brittany, its juggernaut across France, the mid-winter attack to the north during the Battle of the Bulge, and the final thrust into Germany and Czechoslovakia. The authors used most of the standard references to frame the story: Patton’s own *War As I Knew It*, Blumenson’s *The Patton Papers*, Province’s *The Unknown Patton*, Essame’s *Patton: A Study in Command*, D’Este’s *Patton: A Genius for War*, and others. But what is really unique about this treatise on Third Army is the photographic coverage. The book does exactly what the authors promised in the subtitle—provided a photographic history. And what a collection of photos it is! By scouring the National Archives’ and the General George Patton Museum’s holdings and pursuing leads through other organizations and individuals, Green and Brown put together a very good story. If one didn’t want to read the book’s text, a reader could get a pretty good idea of the story of Third Army just by looking at the pictures and reading their captions.

Several things stood out for me in this book. First, for those of us who weren’t “ground guys” in the military, I got a real

education just from the photo coverage of an amazing array of weaponry. I knew there were many versions of the venerable Sherman tank, but I’m pretty sure the authors included a picture of all of them. And it’s not only the American weapons that are depicted, but also all of the variety of German ones that Third Army had to contend with as well. Second is that the book is loaded with sidebars that provide backgrounds on Patton’s superiors as well as many of his corps and division commanders. But most of the sidebars are quotes from Patton—some of his instructions to the troops and other thoughts about many aspects of ground warfare in World War II.

All that being said, don’t buy this book if you want a history of air power. It is about Third Army and its ground operations. However, the authors do acknowledge—as any book about Patton has to—the role played by XIX TAC. Patton himself described the relationship between Third Army and XIX TAC as “love at first sight.” Without air power, I’m sure Patton would have acknowledged that what his men did would have cost a lot more and would have taken a lot longer without Weyland and his men. In fact, Patton called Weyland “the best damn general in the Air Corps.”

If I were forced to pick one book to recommend to someone who had never heard of Third Army, this one would probably have to be it. Excellent read.

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



Eugene Bullard: World’s First Black Fighter Pilot. By Larry Greenly. Montgomery, Ala.: NewSouth Books, 2013. Illustrations. Index. Pp xii, 147. \$19.95 ISBN: 978-1-58838-280-1

Greenly is a freelance writer and editor as well as writing instructor from Albuquerque, New Mexico, who decided to write this biography because he was looking for subject matter relating to the Southwest. After viewing the 2006 movie *Fly Boys*, a fictional account of Americans flying for the French in World War I, he was drawn to the character loosely based on future Medal of Honor winner Frank Luke. His interest shifted, however, to the story of Bullard, also loosely depicted in the film.

Drawing on a wide range of secondary sources as well as Bullard’s published memoirs, Greenly recounts the life and times of this remarkable man. Starting

with Bullard’s upbringing in the Deep South in the latter part of the 19th century, he traces his teenage subject’s trek across the Atlantic to first the United Kingdom and then to France, a country which he believed would be free of racial prejudice.

Along the way, Bullard became a skilled prize fighter eventually based in Paris. That career, however, came to an abrupt end with the start of World War I. As an American citizen, he was barred from enlisting in the regular French army. However, he could, and did, enlist in the French Foreign Legion. Over the next two years, he proved to be a fearless soldier, winning several decorations for bravery including service during the Battle of Verdun in February and March 1916. Severely wounded, he needed five months to recover. Returning to the army, he requested and was granted a transfer to the Lafayette Flying Corps, a unit of American volunteers flying for France. Eventually, Bullard would fly SPAD VII and XIII fighters.

His time as a pilot was relatively short lived. He attempted to transfer to the U.S. Army Air Service. The other American volunteers were commissioned as second lieutenants, but Bullard was denied the promotion. To fly for the United States, one had to be a commissioned officer. One by one, the volunteers departed. Bullard was left behind. Eventually, the French transferred Bullard back to the French Army, where he served at a rest camp for the final year of the war.

Between World War I and II, Bullard briefly resumed his boxing career, started a family, and owned and operated a series of night clubs in Paris. With the Germans overrunning France in June 1940, he chose to return to the United States. He worked at various jobs thorough the 1940s and 1950s. On several occasions, French officials, including President Charles De Gaulle specifically recognized his contributions to their nation. Bullard died in October 1961. In 1994, the United States Air Force posthumously commissioned Bullard a second lieutenant.

Greenly has chosen to interject fabricated dialogue to facilitate the narrative. This work is best suited for younger readers as an example of an individual who overcame substantial obstacles. Aside from the anecdotal aspects of Bullard’s life, World War I enthusiasts will find little of interest.

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



Winning Tactics: War In The Air. By R. J. MacLean. Amazon. 2014. Photographs. Sketches. Bibliography. Pp. 189. \$18.90 paperback ISBN-13: 978-1492984184

MacLean's title implies his book is about aerial tactics. It was frustrating to read although quite interesting in parts. It begins with the first balloons in 1783 and discusses balloon use during the Napoleonic wars, the American Civil War, the Franco-Prussian War, and the Boer War before turning to the airplane. Subsequently, MacLean takes us through World War I, the Spanish Civil War, World War II, the Cold War, and campaigns including the Falklands and Desert Storm.

The book is filled with fascinating illustrations taken from older sources, although not always pertinent to the material being discussed. It is as if he could not quite bring himself to leave them out since he had taken the effort to acquire them. For example, when dealing with Gotha bombing raids on London during World War One, he has pertinent illustrations of the B.E.2c night-fighter and Handley Page 0/400 heavy bomber. But there are also three antique aviation-related advertisements for Spinx [sic] ignition (spark) plugs, a Wright-type seaplane, and a Burberry Air Warm (flying coat). These do reflect the style of the time and help put the reader into that era, but what they have to do with Gotha bombing is a mystery.

MacLean has done a commendable job of relating various air actions over a series of wars and engagements and provides a great deal of interesting information. Coverage of the Arab-Israel and the Indian-Pakistan conflicts very thorough. However, several egregious errors of fact caught my eye. He speaks about 200,000 Marines landing on Leyte in 1944, when it was the Sixth U.S. Army with four divisions (no Marine ground forces were involved). Elsewhere he states that Admiral Nimitz (in Pearl Harbor) heard Rear Admiral Sprague's plain-language radio calls for help (all the way from Leyte Gulf), as an Imperial Japanese Navy fleet threatened total destruction of Sprague's task group. Sprague did call for help, and some of those calls were undoubtedly over UHF voice radio, but UHF is line-of-sight only. The urge to introduce a little drama into the narrative may have led MacLean to ignore the laws of physics.

Wartime actions and reactions should be discussed at three levels: strategic (worldwide or theater), operational (campaigns), and tactical (battles or engagements). One can draw some conclusions about air war strategies and operational plans (and results-good or bad) from

MacLean's text, but most of his discussion is at the tactical level of individual fighter pilots.

In his discussion of Bomber Command in World War II, he ignores the failure of RAF pre-war theory that called for daylight precision bombing (discarded almost immediately because of unacceptable losses to German fighters), the switch to a night precision bombing campaign (discarded subsequently due to an inability to navigate accurately at night to a target city, let alone a factory), and the final choice of night area bombardment that destroyed a lot of housing but failed to seriously disrupt German industrial production. He advocates, in retrospect, a bomber campaign against key industrial targets such as the U-boat yards in Bremen, opining that it would have ended the war much earlier. Perhaps, but it smacks of unwanted enthusiasm for all things aerial without any proof.

I was put off by the book's format. There is a table of contents, and a breakdown of each chapter into separate segments, but the segments are indicated by a caption on the top of a page rather than a more normal breakdown. There is no index to help find information about an individual or particular air action. I give this book a lukewarm endorsement at best. A Kindle version probably costs less than a *latte* so you won't have lost much if you do buy it.

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



Memoirs of a Stuka Pilot. By Helmut Mahlke (John Weal translator). Barnsley UK: Frontline Books (an imprint of Pen & Sword Books), 2013. Photographs. Appendices. Pp. 269. \$29.95. ISBN: 978-1-84882-644-4

Helmut Mahlke's account of his experiences as a *Luftwaffe* pilot and unit commander during the early months of World War II is an engrossing and exceptionally informative book. Of the many *Luftwaffe* pilots who composed memoirs, only one other (the famous "tank buster" Hans Ulrich Rudel), flew the much-feared, crank-winged Stuka dive bomber, and he did so during the second half of the war. Mahlke's memoir covers in depth and detail the life and times of Stuka pilots earlier in the war, particularly during the heady invasion of France; the less sanguine Battle of Britain; Malta, Crete, and in North Africa; and the opening, halcyon weeks of Barbarossa.

Mahlke began his career as a pre-war *Kriegsmarine* (German navy) floatplane pilot, observer, and instructor. Joining the expanding Stuka force—initially as a member of what was planned to be the *Luftwaffe's* air group for the *Kriegsmarine's* aircraft carrier *Graf Zeppelin*—Mahlke was a squadron commander during the French campaign and a group commander during the Battle of Britain, Mediterranean operations, and Barbarossa. Never boastful or ego-centric, his memoir consistently highlights the successful ingredients of effective leadership and command, something every USAF squadron commander should appreciate.

Shot down (for the third time) by MiG-3s near Minsk on July 8, 1941, and grounded because of extensive burn injuries, Mahlke's account ends rather abruptly with the *Luftwaffe* very much at, or slightly beyond, its zenith. Translator John Weal crafted an Afterword, "chronicling the Gruppe's activities during the remainder of the war and describing what later befell some of the personalities [Mahlke's] narrative brings so vividly to life."

The most engaging aspect of the story is the uncommonly thorough humanity with which it is infused, and not just in recounting flying and combat experiences. The veteran combat commander enriches his account with his evocative descriptions of some of the very visceral emotions experienced during his early life: from explaining (but not defending or justifying) the German people's intense hatred for, and the abject lack of hope caused by, the Versailles Treaty; to the thrill of flying (and exhilaration of living through three crash landings!); to the deep sadness at the losses of friends and comrades. In the last he is particularly assiduous, making sure to account for each member of his unit lost in the conflict, even mentioning where they were from. Of five detailed appendices, three are dedicated to accounting for these men.

Weal, a well-known authority on the *Luftwaffe* and a prolific author on the subject, has done the English-speaking world a great service by translating this historically significant account. Despite his assurance that "this is a true representation of the original text" and only "a few historical inaccuracies have been corrected," occasionally there are places where it reads as if Weal inserted some of his own considerable knowledge into Mahlke's descriptions and explanations. While enriching the narrative, this tends to generate a slightly disconcerting distraction, creating the impression that it is no longer Mahlke doing the "talking."

While a great read, the book lacks

several essentials as a reference work for further use by World War II air power historians: no index, no organizational charts or rank correlations, and a total lack of maps. Overall, however, this book is a worthy addition to any World War II military aviation historian's library and is unreservedly recommended.

Col. Douglas C. Dildy, USAF (Ret.), Historian and Author, Albuquerque, New Mexico



Merrill's Marauders: The Untold Story of Unit Galahad and the Toughest Special Forces Mission of World War II.

By Gavin Mortimer. Minneapolis, Minn.: Zenith Press, 2013. Maps. Tables. Photographs. Notes. Bibliography. Index. Pp. ix, 240. \$30.00. ISBN: 978-0-7603-4432-3

The first word that came to mind when I read this book was why? Why did the author feel compelled to write it? The subtitle calls it an untold story of the war's toughest special forces mission. It does tell Galahad's story (sort of), and this may in fact have been the toughest special forces mission of the war, but it certainly isn't an untold story. In his acknowledgments, Mortimer mentions two key texts: a memoir and a unit history written by members of the Marauders. He cites them extensively and even mentions the awful 1961 Hollywood telling of the tale. So, if the story has been told, one would expect Mortimer to present new information or a different perspective. Having read some of the other books cited in the bibliography (particularly Charlton Ogburn's excellent memoir *The Marauders*), I can say this book doesn't do either. Therefore, the only explanation for the subtitle is that it is publisher's hype designed to sell books.

To give Mortimer his due, this is a very readable book. It relies primarily on first-person accounts and interviews he conducted that give the narrative a sense of immediacy and personal flavor that makes for enjoyable reading. Mortimer is a good writer, and the story has great flow. The supporting material (outstanding maps, notes, a timeline, photographs) all add significantly to the story's presentation. But as a history claiming to tell an untold story, it falls far short of what one might hope for or expect.

That brings me to another word that came to mind: superficial. The dust jacket touts Mortimer as one of the foremost experts on World War II special operations; but this book contains no detailed discussion of the recruitment, selection, training, tactics or mission of Unit

Galahad. There are no comparisons or connections to other Allied special operations forces (British Commandos, SOE, the American Rangers in Europe, Marine Raider Battalions in the Pacific, or OSS) and only very superficial connection to the British Chindits. The book doesn't address the broader issue of the mission's strategic impact on the fight for Burma. It does highlight Colonel Charles Hunter, the real field commander throughout Galahad's existence, but barely mentions two new commanders (one of whom was quickly fired) or any potential impact they might have had, each of whom took over for a brief time following Merrill's final evacuation due to heart problems. The dust jacket claims Marauders didn't get deserved recognition in the form of decorations due to command indifference (Gen Stilwell) and lost records but then states they were collectively awarded 54 high-level individual decorations and the Presidential Unit Citation. After reading the dust jacket, I wondered if perhaps it was on the wrong book!

This work ultimately amounts to an apology for Col Hunter and is the author's attempt to right what he sees as the injustice Hunter suffered in never receiving any official recognition for his contribution, while Merrill and Stilwell unjustly reaped the benefits of the unit's success. There is nothing wrong with such an effort, but this book isn't what it claims to be and, therefore, is definitely one to pass by. Read the accounts by Marauders themselves (Ogburn's book or James Hopkins *Spearhead*) instead.

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



The History of Bulgarian Air Power.

By Dimitar Nedialkov, Published by Albatros MDV, Bulgaria, 2013; Pp. 479. Photographs. Maps. Illustrations. \$44.00 ISBN 978-954-509-471-2

This authoritative and excellent work, written by a Bulgarian Air Force colonel (and still-active MiG-21 and -29 pilot) is from first glance an obviously well-researched and quite comprehensive history. As the title implies, it is a complete look at the relatively unknown history of Bulgarian military aviation development. The book is well illustrated in the Putnam books style with 789 black-and-white photographs, most of which were new to me. Those and the many maps, charts, and illustrations all complement the text well.

Nedialkov examines not only aircraft and pilots that flew for Bulgaria but also

those machines that were built and, in some cases, designed in Bulgaria. He also provides the political and social events behind the formation of the Bulgarian aviation arm. The timeframe covered is from just prior to the Balkan War of 1912 through 2010. The section on World War I is replete with Bulgaria's activities as part of the Central Powers, of which very little has been previously detailed elsewhere. Of course, the inter-war years and World War II are meticulously covered; those who are interested in this period will not be disappointed. The post-war transformation to a Soviet-Russian system is extremely well documented and provides great insight into the emergence of Cold-War politics and the activities of an Eastern-Bloc nation. The story does not quite end there, as the transition to membership in NATO and then the European Union (events inconceivable just a few years prior) rounds out the history.

Particulars of military aviation events in Bulgaria have been obscure for a variety of reasons, not the least of which are the Bulgarian language and the lack of access to primary-source material. However, in the ten years following NATO and EU membership and the opening of the society, materials in archives and related information have become more accessible.

The author, Col. Dimitar Nedialkov, Dr. Sc., is also the head of the Air Force Department in the Bulgarian Military Academy. He is well known to the Bulgarian aviation researcher community and has begun to bring his talents and abilities (he has written well over 150 articles and monographs) to the English-reading community. This book is a comprehensive romp through Bulgarian air power. Aviation enthusiasts are quite fortunate to now have a well-documented work available in English and written by a Bulgarian who has access to a great deal of primary-source material and who thoroughly appreciates his subject matter.

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



Taking Fire: Saving Captain Aikman: A Story of the Vietnam War.

By Kevin O'Rourke and Joe Peters. Philadelphia: Casemate, 2013. Photographs. Notes. Glossary. Bibliography. : Pp. 216. \$24.95 ISBN: 978-1-61200-126-5

Taking Fire is the story of a single event in a single day during the Vietnam War: the rescue of Capt. Lynn Aikman, an F-4 pilot shot down over North Vietnam in

the days following the North Vietnamese 1972 Easter offensive. Captain Aikman's flight of F-4s, call sign Valant, was providing cover for strike forces when it was jumped by North Vietnamese MiGs. In the space of less than a minute, two of the four aircraft went down. This book chronicles the efforts of the extraordinary people of the U.S. Air Force who risked their lives to try to bring these four aviators home.

The book started as a college research project in 1982. Kevin O'Rourke wanted to highlight what he felt was an underappreciated Air Force mission in Vietnam—combat rescue. He came back to the project in later years wanting to share the story with a wider audience. Since his original effort, many books about the rescue service and specific rescues have come out (*Bat-21* probably is the best known); this is a fitting companion to those earlier works. O'Rourke focusses on the people. He describes the lives of key participants leading up to that fateful day. By using first-person accounts from F-4 aircrew (including the Fast FAC who witnessed the shootdown) to rescue crewmembers Chuck McGrath (pararescueman) and Dale Stovall (helicopter pilot) to McGrath's wife (an Air Force medical technician stationed in Thailand), he builds a complete picture of the day's events. His goal is to show that, although this sort of mission occurred almost every day in Southeast Asia, all were fraught with danger and required a unique blend of professionalism and courage.

The book is a quick read, being just over 200 pages including an epilogue chronicling the participants' lives after this momentous event. The narrative is not strictly chronological but jumps from the mission to incidents in the lives and careers of the participants and back. It can be somewhat confusing, but O'Rourke does a good job of moving the story forward. He relies almost exclusively on first-person accounts, including interviews with the four most important participants within 10 years of the event. First-person accounts can be difficult to use because of personal bias and a narrow perspective of events, but O'Rourke does an excellent job weaving the separate stories into a complete picture. He was so effective that the participants learned facts about that day they didn't know even though they had been friends with each other for years.

There are some criticisms, most of which I lay at the editor's door. The captions for the good photos are lifted word for word from the text and add nothing. There is a bibliography of sorts in the acknowledgements section, but it would be nice to know what other sources (if any) were used. There are a number of spelling

errors which seem to be more and more the norm these days. Finally, there are no maps at all. For a reader unfamiliar with the terrain of Northern Vietnam, Laos, and Thailand, a good map would be helpful. This is a well-researched and written story highlighting the efforts of some amazing people. It is a bit pricey, but anyone interested in Air Force Rescue and this era of history will find it worth the price.

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



Imperial Russian Air Force 1898-1917.

By Gennady Petrov. London: Unicorn Press, 2014. Photographs. Index. Pp. 264. \$39.95 ISBN: 978-1-906509-40-8

Occasionally a book on aviation history comes along that is singularly compelling for both its quality and quantity of images. This is one of those volumes. The subject is far more interesting and runs further afield than the title suggests. Petrov's book is truly about the aeronautical community in Imperial Russia from its inception. It well describes how this community would form the nexus of the Imperial Russian Air Force that would face the combined forces of Germany, Austro-Hungary, and the Ottoman Empire in the Great War from 1914-1917.

Petrov surveys the development of aviation from aerostatics (balloons), and even tethered kites, to the very first aircraft built and flown in Russia. The section on World War I is, as the title suggests, complete with images of aircraft and personnel from the Navy and Army squadrons on the northern and southern fronts as well as the ubiquitous Sikorsky Il'ya Muromets long-range strategical reconnaissance/bomber flown by the Eskadra Vozdushnykh Korablei (*EVK* or *Squadron Flying Ships*).

English-language books authoritatively dealing with the subject of the beginnings of aviation and aircraft construction in Imperial Russia have only recently been produced. The reasons are complex: certainly the Russian language itself as well as the closed door for archival research approved only by the State are two of the major factors. Nevertheless, over the past three decades Soviet and, now, Russian archives have slowly become more accessible. Historians and researchers have provided a steady stream of works, although much of it has been written by Russians. Occasionally, when picked-up by western publishers, one of these is translated and, thus, becomes more readily available, as is the

case with Petrov's book.

The volume is well illustrated with over 400 high-quality photographs; a great many of these are not only new to me but also are historically significant. The captions and the index are direct transliterations. This might produce some confusion to the uninitiated with regards to the spelling of names and places, but this should not detract from the overall importance of the book. Whatever deficiencies arise here are made up for tenfold by the book's photographic content. This book is an excellent photographic romp through the history of aviation in Imperial Russia, and I highly recommend it.

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



Royal Air Force Historical Society Journal 56 [Prisoners of War]. London: RAF Historical Society, 2013. Maps. Notes. Illustrations. Pp. 180 ISSN: 1361 4231

Each year, the Royal Air Force Historical Society generally hosts three seminars or conferences in London with occasional events in other parts of the United Kingdom. This issue of the Society's *Journal* features papers and discussions on prisoners of war (POW) and related matters such as escape and evasion (E&E) that were presented at a conference in 2013. Included are seven papers, transcripts of two discussions, and book reviews independent of the issue's theme.

As might be expected, the papers focus on the Royal Air Force (RAF) POW experience in World War II. The lone exception is a talk by a Panavia Tornado weapons officer downed during an attack on an Iraqi airfield during Operation Desert Storm in 1991.

Prior to World War II, the RAF had given little thought to training its aircrews in E&E. The first paper discusses the initial attempts to organize evasion networks in western Europe. Not until December 1939, three months after the United Kingdom went to war, did the Directorate of Military Intelligence establish an agency, MI9, to deal with issues concerning prisoners. Its initial director defined the organization's goals: 1) to facilitate escape, 2) to facilitate return, 3) to collect and distribute information, 4) to deny the enemy information, and 5) to maintain the morale of British POWs. Besides the main office in London, other offices were established in Cairo and Calcutta.

The second paper deals with develop-

ment of E&E aids and aircrew training. An effective E&E program in Europe prompted the Germans to divert resources to track down evaders. Various individuals and businesses created a wide variety of ingenious equipment to assist those in captivity contemplating escape. This equipment also aided those who evaded by increasing their chances to return to the United Kingdom.

While two of the larger German camps, *Stalag Luft I* and *Stalag Luft III*, have become well known over the years, more than 20 camps existed at one time or another. The third paper describes how this number fluctuated depending on how the Germans chose to manage the increasing number of POWs from all nations.

The fourth paper offers insight into the actual escape routes in Nazi-occupied Europe. The networks associated with each occupied country are discussed in considerable detail with attention devoted to the fearless civilians responsible for organizing the "lines."

In 1973, the United States dealt with the return of nearly 600 prisoners from North Vietnam. At the conclusion of World War II, repatriated Allied prisoners, most of whom were in poor physical condition, numbered in the tens of thousands. In Europe, where Allied forces occupied Germany, assistance arrived fairly quickly. The situation was far different in Asia where many camps were situated in remote locations. Particularly challenging were the camps in the Dutch East Indies, a subject discussed at length in the fifth paper.

The final paper documents the internal organization established by the POWs held in the German camps. It also lists 33 British military personnel who successfully escape from a German camp and made their way home.

The Royal Air Force Museum website makes available older electronic versions of the *Journal* as well as other material of historical interest.

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



Disarming Hitler's Weapons. By Chris Ransted. South Yorkshire, UK: Pen & Sword, 2013. Photographs. Illustrations. Appendices. Footnotes. Index. Pp. 268. \$39.95 ISBN: 178159386-8.

This is an interesting book for a reader who wants a great deal of detail about the efforts of UXB (unexploded bomb) personnel and squads that learned

their trade dealing with German Luftwaffe bombs dropped in England in 1939 and 1940. They also dealt with aerial mines, particularly magnetic mines. The equivalent American term is EOD (explosive ordnance disposal). Author Ransted caught me by surprise when he noted that British UXB personnel were not all necessarily volunteers for this line of work!

In 1944 two new weapons started landing in England and on the continent. The first was the V-1, a flying bomb, the earliest operational cruise missile. It was dubbed the "buzz bomb" because of the sound of its pulsejet engine. It was also known as a "doodlebug." V-1s flew at fairly low altitudes—around 4,000 feet—at a speed of about 400 mph and could be seen and shot down by anti-aircraft artillery and fighter aircraft. They also could be knocked down by barrage balloon cables. The missile was also referred to as a "diver," because it dove towards the ground when its range-counter determined that the preset range had been reached. The warhead (about 1,850 pounds of high explosive) was designed to go off on impact with a solid object. However, not all V-1s exploded on impact. They had a nose fuse and two side fuses; occasionally, impact on a soft surface left the warhead intact and, frequently, buried. Fortunately for UXB personnel, there were no timed delay fuses or booby traps built into the weapons.

The second weapon was the V-2, a liquid-fueled ballistic missile with a 2,000 pound high-explosive warhead and impact fuses. The V-2 would occasionally unintentionally burst above its target, probably due to air loading on the missile and the fuses. The V-2 was coming down at about Mach 3 (2,100 mph) when it approached its target. UXB squads were called in when the warhead failed to detonate. The V-2 warheads usually buried themselves fairly deeply in the earth.

For those interested in either cruise or ballistic missiles, the book shows a side that is frequently neglected—that of the clean-up crews who had to deal with the dangerous residue of a missile strike. Although the author, an Englishman, focuses on British UXB personnel and organizations, he also includes material about allies, including Americans and Dutch, and even about post-war German UXB personnel who had to deal with long lost missiles of both kinds.

I was aware of the British slang term "boffin," which means scientist; but I had to look up "gaine" online. Wikipedia indicates this means an explosive booster charge between the detonator and the main explosive charge. So, some transla-

tion may be required by the American reader!

*Captain John F. O'Connell, U.S.N (Ret),
Docent, National Air and Space Museum*



Hidden Warbirds: The Epic Stories of Finding, Recovering & Rebuilding World War II's Lost Aircraft. By Nicholas A. Veronico. Minneapolis Minn.: Zenith, 2013. Tables. Photographs. Bibliography. Index. Pp. 256. \$30.00 ISBN: 978-0-7603-4409-5

One of my chosen pastimes is to park myself on a summer afternoon in the beautifully restored B-17 flown into our local airport by the Collings Foundation and commune with my favorite World War II aircraft. When flip-flopped tourists crowd the radio room, I decamp to the like-new B-24 nearby and gaze out the waist windows at the immaculately polished P-51C or the looks-ready-for-combat B-25. Collings' well-preserved aircraft are evidence of the boom in warbird recovery and restoration. The result has been tremendous growth in the number of warbirds flying, on public view, or under restoration.

A past president of the Society of Aviation History, Nicholas Veronico has written over two dozen works on aviation history, including *Wreckchasing: A Guide to Finding Aircraft Crash Sites* (1992) and *Military Aircraft Boneyards* (2000). He has traveled to warbird locations all over the world and sponsors a warbirds bulletin board on his website. *Hidden Warbirds* reflects his experiences locating and recovering aircraft wrecks from impenetrable jungles, under water or ice, atop mountains, or the usual overgrown airport ramps and barns. This work details the art and science of World War II-era aircraft recovery and restoration—virtually a "how-to" for the ambitious neophyte. Planes submerged in fresh water, buried in sand, or in such cold, dry environments as the Russian steppe, it is noted, survive better than those in corrosive saltwater or extremes of weather. He describes legal and bureaucratic problems as well: governments that must issue permits, militaries, and landowners who must consent. Funding sources, heavy-lift cranes for hire, transportation from far-flung places are all detailed. *Hidden Warbirds* joins such recent warbird works as W. W. Martin, *So I Bought an Air Force: The True Story of a Gritty Midwesterner in Somoza's Nicaragua*, Gordon Page's *Warbird Recovery: The Hunt for a Rare World War II Plane in Siberia, Russia*,

and Carl Hoffman's *Hunting Warbirds: The Obsessive Quest for the Lost Aircraft of World War II*. In particular, this book focusses on the practical aspects of restoration. The *Owner's Workshop Manual* series, covering specific aircraft types in great detail, is another example.

People are a chief feature of this book. The key to warbirds is the passion of those who go to great lengths to find, restore, and maintain them. This is a democratic field, ranging from professional conservators to independents of various means. A warbird recovery, restoration, and maintenance industry has evolved, although individuals with borrowed pickup trucks still recover plenty of wrecks, stash them in driveways and garages, and restore them bit by bit.

Early collectors obtained most warbirds from foreign air forces, scrapyards, or firefighters. These were primarily types retained and used after World War II, such as the P-51. As those sources tapped out, eager searchers extended the hunt almost literally to the ends of the earth. Veronico lists the location and status of each existing example of a specific type. One astonishing fact is the number of potentially retrievable aircraft—thousands maybe—in places such as Lake Michigan, the English Channel, New Guinea, North Africa, and the Russian steppe.

The growth and importance of such organizations as the Commemorative Air Force in fostering interest in warbirds is a consistent theme as is the role of movies and television shows in generating awareness. For instance, the *Baa Baa Blacksheep* TV series that featured Corsairs generated fresh interest in restoring more such aircraft. The movie version of Joseph Heller's novel *Catch 22* did the same for B-25s.

The bibliography and index are especially helpful as is an annotated list of internet resources categorized by such useful topics as Aircraft Wrecks and Aviation Archaeology, Warbird Restoration/Aviation Museums, and Warbirds and Air Racing. The index is broken out by aircraft by country, museums, and U.S. manufacturers, including restoration organizations, as well as the usual general listing of terms.

The book focuses on U.S. planes of the World War II and late interwar era. Veronico's *Hidden Warbirds II*, to be published this year expands that. Zenith has produced a handsome, full-color book printed on archival quality stock, sturdily bound in cloth that easily lays flat when open, and obviously is intended to serve as a handbook of repeated reference.

Steve Agoratus, Hamilton NJ



Da Nang Diary: A Forward Air Controller's Gunsight View of Flying with SOG. By Tom Yarborough. Casemate Publishers, 2013. Map. Photographs. Glossary. Bibliography. Index. Pp. 335. \$32.95 ISBN 978-1-61200-220-0

For those who would like to be in the cockpit with a USAF Forward Air Controller (FAC) to see how they carried out their missions, this is a must-read book! Retired USAF Colonel Yarborough originally published it in 1990 but has now revised and updated the volume with over 50,000 words of additional information on his experiences. Recently declassified Top Secret files allowed him to add more background and details to again relive key missions in this new edition. It puts the reader in the action with the many aircraft and the Studies and Observation Group (SOG) special forces.

Most of the material came from the extensive diary he kept while at Da Nang and covers 1,500 combat flying hours in over 600 FAC missions. Yarborough does not consider his memoir as history, but he claims this book is a contribution to the research of historians. He brings to light many factual activities of the top secret *Operation Prairie Fire*, that involved supporting SOG special forces raids into Laos and the Demilitarized Zone. Yarborough went on to complete a 30-year USAF career as a command pilot with 30 combat decorations. He is currently an adjunct history professor at Northern Virginia Community College.

Although the FAC concept had its beginnings in World War II and Korea, Vietnam operations further developed it in many ways. Yarborough's story mainly covers his tours with the 20th Tactical Air Support Squadron "Coveys" and the *Prairie Fire* operations. The FACs primarily flew Cessna O-2s and North American OV-10 Broncos. Yarborough does an excellent job of putting the reader in the cockpit and a flight suit in his harrowing missions. His descriptions of flying the OV-10 reveal his superb flying skills and mastery of the Bronco; they melded together delivering lethal results to the enemy. The reader is emotionally down low in the tops of the trees with inbound enemy gun fire. It is difficult to put this book down.

Yarborough is very believable and effective in describing the SOG teams' tactical operations of insertion, extraction, and rescue. The FAC was on-site in the air directing and orchestrating the dangerous operations and actions of the Slicks (Huey helicopters), A-1 Spads, F-100s, H-3 Jollys, and other aircraft. The action on the pages is riveting as the air assaults and ground battles unfold. The descriptions are exciting, and they were real. The efforts to rescue and recover our soldiers reveal the highest levels of the honor and integrity of our military forces. I wish more of our American population knew about these heroic rescue missions.

Yarborough's combat recollections are very moving. He explains combat brotherhood thoughtfully, as one who has lived it. He realistically recalls the battles and the continual life-threatening challenges of the Vietnam war. In the epilog at the end of the book, Yarborough finishes with "A Whiskey Front Examination of What's Important." His revelations and thoughts are well worth reading.

Paul D. Stone, Docent, NASM Udvar-Hazy Center



PROSPECTIVE REVIEWERS

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

Col. Scott A. Willey, USAF (Ret.)
3704 Brices Ford Ct.
Fairfax, VA 22033
Tel. (703) 620-4139
e-mail: scottlin.willey@gmail.com

Books Received

Busha, James P. *The Fight in the Clouds: The Extraordinary Combat Experience of P-51 Mustang Pilots during World War II*. Minneapolis, Minn.: Zenith Press, 2014. Illustrations. Photographs. Index. Pp. xvii, 238. \$30.00 ISBN: 9-780-760345184.

Head, William P. *Night Hunter: The AC-130s and their Role in U.S. Air Power*. College Station: Texas A&M University Press, 2014. Notes. Illustrations. Photographs. Bibliography. Index. Pp. x, 423. \$29.95 Paperback ISBN: 978-1-73459-119-2

Heaton, Colin D. and Anne-Marie Lewis. *The Four-War Boer: The Century and Life of Peter Arnoldus*

Krueger. Philadelphia and Oxford: Casemate, 2014. Notes. Photographs. Appendix. Bibliography. Index. Pp. 274. \$32.95 ISBN:978-1-61200-175-3.

Lucks, Daniel S. *Selma to Saigon: The Civil Rights Movement and the Vietnam War*. Lexington: University Press of Kentucky, 2014. Notes, Photographs. Bibliography. Index. Pp. 366. \$35.00 ISBN: 078-0-8131-4507-5

Palin, Sarah. *Sarah Palin; Going Rogue; An American Life*. New York: Harper Collins, 2009. Pp 413.

Books Available to be Reviewed

—, *Allied Air Power 1942-1945: A Newsreel History of Allied Air Force Operations in World War II*. DVD 80 min.

Barzilai—*102 Days of War: How Osama bin Laden, al Qaeda & the Taliban Survived 2001*. 167p.

Blackman—*Nimrod: Rise and Fall*. 223p.

Busha—*The Fight in the Clouds: The Extraordinary Combat Experience of P-51 Mustang Pilots During World War II*. 238p.

Canadian Forces—*Curtis Papers: Canadian Aerospace and Joint Studies, Vol.1, Book 1: 2009-2010, Select Masters in Defence Studies Papers*. 184p.

Canadian Forces—*Curtis Papers: Canadian Aerospace and Joint Studies, Vol.2, Book 1: 2009|2010, Masters of Defence Studies - Select Papers*. 207p.

Denton—*Believers in the Battlespace: Religion, Ideology and War*. 231p.

Grandolini—*Fall of the Flying Dragon: South Vietnamese Air Force 1973-75*. 253p.

Head—*Night Hunters: The AC-130s and Their Role in US Airpower*. 423p.

Heaton & Lewis—*The German Aces Speak II: WWII Through the Eyes of Four More of the Luftwaffe's Most Important Commanders*. 296p.

Hemingway-Douglass—*The Shelburne Escape Line: Secret Rescues of Allied Aviators by the French Underground, the British Royal Navy, and London's MI-9*. 197p.

Homan & Reilly—*Black Knights: The Story of the Tuskegee Airmen*. 336p.

Jackson—*Doctrine, Strategy and Military Culture: Military-Strategic Doctrine Development in Australia, Canada and New Zealand, 1987-2007*. 185p.

Jefford—*Observers and Navigators: And Other Non-Pilot Aircrew in the RFC, RNAS and RAF*. 401p.

Jones—*An Air Fighter's Scrapbook: A Firsthand Tour Through Great War Aerial Combats and the Early Days of Aviation*. 355p.

Kahnert—*Jagdstaffel 356: The Story of a German Fighter Squadron*. 125p.

Kingsford—*Night Raiders of the Air: Being the Experiences of a Night Flying Pilot who Raided Hunland on Many Dark Nights During the War*. 168p.

Lambricht—*Why Mars: NASA and the Politics of Space Exploration*. 320p.

Lucks—*Selma to Saigon: The Civil Rights Movement and the Vietnam War*. 366p.

McKay—*Shifting Sands: Air Coercion and Iraq, 1991-2003*. 189p.

Newdick & Cooper—*Modern Military Aircraft: The World's Great Weapons*. 384p.

Philpott—*The Birth of the Royal Air Force*. 479p.

Pressfield—*The Lion's Gate: On the Front Lines of the Six Day War*. 430p.

Ralph—*The Crash of Little Eva: The Ultimate World War II Survivor Story*. 209p.

Schubert—*Other than War: The American Military Experience and Operations in the Post-Cold War Decade*. 126p.

Sine—*Guardian Angel: Life and Death Adventures with Pararescue, the World's Most Powerful Commando Rescue Force*. 239p.

Stout—*Unsung Eagles: True Stories of America's Citizen Airmen on the Skies of World War II*. 288p.

Trest—*Once a Fighter Pilot: The Story of Korean War Ace Lt. Gen. Charles G. "Chick" Cleveland*. 263p.

Wakelam—*Cold War Fighters: Canadian Aircraft Procurement, 1945-54*. 187p.

Coming Up



Compiled by
George W. Cully

July 9-12, 2014

The **Ninety-Nines**, the international organization for women pilots, will host its annual meeting in New Orleans, Louisiana. For additional information, see their website at http://www.ninety-nines.org/index.cfm/conference_dates.htm.

July 28-August 3, 2014

The **Experimental Aircraft Association** will host its annual signature event, Airventure, in Oshkosh, Wisconsin. In addition to multiple other activities, this year's celebration of aviation will include a special Centennial of World War I event featuring antique, reproduction and replica examples of military aircraft used during that conflict. For more information see the EAA's website at www.AirVenture.org.

July 29-August 2, 2014

The **International Committee For the History of Technology** will hold its 41st annual symposium in Brasov, Romania. The theme of this year's symposium is "technology in periods of transition." For further details, see the Committee's website at www.icohotec.org.

August 7-10, 2014

The **Mars Society** will hold its 17th annual convention at the South Shore Harbour Resort in League City, Texas, just minutes from NASA's Johnson Space Center. The gathering will bring together key experts, scientists, policymakers and journalists to discuss the latest news on Mars exploration and efforts to promote a human mission to the Red Planet. For details, see the Society's website at www.marssociety.org/home.

September 4-7, 2014

The **Tailhook Association** will hold its annual gathering at John Ascuaga's Nugget Hotel and Convention Center in Reno, Nevada. For more information, visit the Association's website at <http://tailhook.net/>.

September 15-17, 2014

The **Air Force Association** will hold its annual Air & Space Conference and Technology Exposition in Washington, D.C. For more details on the Association's premier event, see its website at www.afa.org/airspaceconf/Home.

September 20, 2014

The **National Museum of the Pacific War** will present its 2014 Symposium at the Admiral Nimitz Museum in Fredericksburg, Texas. For more details as they become available, see the Museum's website at www.pacificwarmuseum.org/news-events/the-2014-annual-symposium/.

September 24-27, 2014

The **Society of Experimental Test Pilots** will hold its 58th annual Symposium and Banquet in Anaheim, California. Details will be announced as they become available at www.setp.org/.

September 26-28, 2014

The **National Museum of the United States Air Force** will host a World War I Dawn Patrol Rendezvous; this event will memorialize the 100th anniversary of the beginning of World War I. For further details, see the Museum's website at www.nationalmuseum.af.mil/wwi.asp.

October 4, 2014

The **National Aviation Hall of Fame** will enshrine its latest group of honorees during a formal dinner at the Hall, co-located with the National Museum of the United States Air Force in Dayton, Ohio. This year's enshrinees will include Bert Acosta, Alan and Dale Klapmeier, James McDivitt, Emily Howell Warner, and Steve Wittman. For more information, see the Hall of Fame's website at <http://nationalaviation.org/>.

October 7-9, 2014

The **Association of Old Crows** will hold its 51st Annual AOC International Symposium and Convention at the Marriott Wardman Park Hotel in Washington, D.C. For more information, ping a Crow at www.crows.org/onventions/conventions.html.

October 8-12, 2014

The **Oral History Association** will hold its 48th annual meeting at the Madison Concourse Hotel in Madison, Wisconsin. This year's meeting theme will be "Motion: Movements, Transformations, and the Power of Story." For additional details, see the Association's website at www.oralhistory.org/.

October 10-11, 2014

The Southwest Branch of the **World War I Historical Association** in conjunction

with Tarleton University at Stephenville, Texas and the Dallas Fort Worth branch of the **League of WWI Aviation Historians**, will sponsor a symposium on October 10-11, 2014 in Stephenville which will look at how Americans engaged in the Great War before the U.S. entered it. For more information, contact M. Kihntopf at kihnt@swbell.net or Dr. Marcy Tanter, at Tanter@tarleton.edu

October 13-15, 2014

The **Association of the United States Army** will hold its Annual Meeting and Exposition at the Walter E. Washington Convention Center in Washington, D.C. For more information on this event, see the AUSA's website at www.ausa.org/meetings/Pages/NationalMeetings.aspx.

November 6-9, 2014

The **History of Science Society** will hold its annual meeting in Chicago, Illinois. For more details as they become available, see the Society's website at www.hssonline.org/.

November 6-9, 2014

The **Society for the History of Technology** will hold its annual meeting in Dearborn, Michigan. For more details as they become available, see the Society's website at www.historyoftechnology.org/.

November 14-15, 2014

The **History and Political Science Department at Chestnut Hill College**, located in Philadelphia, Pennsylvania, will host an interdisciplinary conference on "The Legacy of World War I." Keynote speakers will be Jay Winter (Yale University) and Laura Lee Downs (European University Institute, Florence, Italy). To be placed on a mailing list for conference registration, send your name, mailing address, and email address to William Walker at wwalker@chc.edu.

Readers are invited to submit listings of upcoming events. Please include the name of the organization, title of the event, dates and location of where it will be held, as well as contact information. Send listings to:

George W. Cully
3300 Evergreen Hill
Montgomery, AL 36106
(334) 277-2165
E-mail: warty@knology.net

Reunions

1st AACs MOB Squadron Oct 16-19, 2014, Fairborn, OH Contact:

James Mumaw
5748 Mallard Dr,
Huber Heights, OH 45424-4148
937-236-5323
bigmawmu@aol.com

2d Bombardment Assn Oct 22-26, 2014, Albuquerque, NM Contact:

Karen Nelson
1300 Army Navy Drive #107,
Arlington, VA 22202
703-892-5176
karenwnelson@msn.com

4th Fighter Group (WW II) Oct 1-5, 2014, Fairborn, OH Contact:

Keith Hoey
120 Bay Breeze Dr,
Belleville ON Canada K8N 4Z7
613-813-2727
khoey98@yahoo.com

8th Aerial Port Squadron Mobility Teams Jun 26-28, 2014, Springfield/Columbus, OH Contact:

R. S. Lewis
225 Fair St,
Pounding Mill, VA 24637
276-963-9122
lisaim@live.com

43d Bomb Group Assn 63d, 64th, 65th & 403d Squadrons Aug 27-31, 2014, Washington, DC Contact:

Nancy Solomon
8971 Huntington Pointe Drive
Sarasota, FL 34238-3207
941-966-9212
nansolo.srq@gmail.com

49th Fighter Squadron Assn Sep 11-14, 2014, Fairborn, OH Contact:

John Jannazo
238 E Dixon Ave,
Dayton, OH 45419
850-974-4459
jannazo@aol.com

63d AAF-FTD Oct 12-17, 2014, Douglas, GA Contact:

John A. Herrmann
3562 West Fork Rd.,
Cincinnati, OH 45211
513-481-0130
irmaandjohn@yahoo.com

79th Tactical Fighter Squadron Sep 15-19, 2014, Fairborn, OH Contact:

Roy & Linn Schmidt
972 Wedgewood Dr,
Independence, KY 41051
859-746-8289
chillie764@aol.com

86th Fighter-Bomber Group Assn, WWII Oct 1-5, 2014 Fort Walton Beach, FL Contact:

Dallas Lowe
850-319-0047
fighterbomberpilot@yahoo.com

87th Aerial Port Assn Sep 4-7, 2014, Fairborn, OH Contact:

Charles Hampton
P.O. Box 15585
Covington, KY 41015
859-468-8873
chamrham@aol.com

91st Bomb Group Assn May 21-25, 2014, San Francisco, CA Contact:

Mick Hanou
607 Blossom Ct,
Pleasanton, CA 94566-7783
925-425-3220
mhanou@comcast.net

91st Strategic Recon Wing Assn Aug 11-16, 2014, Fairborn, OH Contact:

Jerry Haines
2411 South Tecumseh Rd,
Springfield, OH 45502
937-325-9306
gerald_haines@yahoo.com

91st Tactical Fighter Squadron Sep 24-27, 2015, Fairborn, OH Contact:

Dion Makris
7152 Hartcrest Ln,
Centerville, OH 45459
937-938-7767
phantombcde@gmail.com

93d Bombardment Group Oct 16-19, 2014, Dayton, OH Contact:

Jim Root
15359 Red Fox Walk,
West Olive, MI 49460
616-218-0787
jamesdavidroot@aol.com

304th Signal Ops Battalion—All Years Sept 16-18, 2014, Branson, MO Contact:

Eber Janzen
1559 North Dewey Ave,
Reedsburg, WI 53959
608-524-3631
BudSmart1@yahoo.com

384th Bomb Group Oct 16-19, 2014, Fairborn, OH Contact:

Frank Alfter
1306 Adams Way,
Beavercreek, OH 45434
937-306-2142
fjalfter@gmail.com

449th Bomb Group Aug 6-9, 2014, Fairborn, OH Contact:

Mary Crowley
16292 Content Circle,
Huntington Beach, CA 92649
714-840-1805
tcrow16@aol.com

452d Bomb Group Oct 1-5, 2014, Dayton, OH Contact:

Carolyn Goodwin
322 Madison Mews,
Norfolk, VA 23507
757-625-6401
carolyn@afri.com

485th Bomb Group, WW II, Italy 50th & Final Reunion Sep 17-21, 2014, Dallas, TX Contact:

Jim Scheib
5360 N. Calle Bujia,
Tucson, AZ 85718
520-615-0397
jimannscheib@comcast.net

496th Tactical Fighter Squadron Oct 23-26, 2014, Fairborn, OH Contact:

J. Kevin Roll
677 Todd Trail,
Newport News, VA 23602
918-815-2629
rolljk@yahoo.com

496th TFS/50th TFW - Hahn AB, Germany (1970-75) Oct 23-26, 2014, Fairborn, OH Contact:

Bill Flanagan
9233 East Ave T-12,
Little Rock, CA 93543
661-944-3125
flapsflanagan@roadrunner.com

504th Bomb Group Assn Aug 27-31, 2014, Omaha, NE Contact:

Ann M. Cacich
6600 131st St, West,
Apple Valley, MN 55124
612-414-9436
blanche1129@frontiernet.net

509th Composite Group Sep 11-14, 2014, Dayton, OH Contact:

Robert Krauss
366 E. Wagner Rd
Buchanan, MI 49107
www.the509thremembered.com

511th AC&W Group Reunion Assn (613th, 847th, 848th AC&W and 39th AD) Oct 2-6, 2014, St. Louis, MO Contact:

Don Simmons
972-231-6518
dona7112@sbcglobal.net
(Central & Southern Japan radar vets too)

554th Recon Squadron Oct 2-5, 2014, Dayton/Fairborn, OH Contact:

Gary Spohn
2600 Alpha E Seltice Way PMB 191,
Post Falls, ID 83854
208-661-7936
garspoid@frontier.com

815th Troop Carrier Squadron Oct 9-12, 2014, Branson, MO Contact:

The Reunion Brat
16817 Mountainside Drive East
Greenwater, WA 98022
306-663-2521
thereunionbrat@hotmail.com

3640th Pilot Training Wing Laredo AFB Officer IP & PP Oct 14-17, 2014 San Antonio, TX Contact:

Ron Hunt
1328 Meadow Moor Dr,
Beavercreek, OH 45434
937-426-0867
ron.hunt.oh@gmail.com

Lakenheath POL (Petroleum, Oils, Lubricants) Oct 10-12, 2014, Fairborn, OH Contact:

David Giboo
57 Bristelcone Ct,
Battlement Mesa, CO 81635
402-558-4431
LakenheathPOL@icloud.com

RAF Upper Heyford Sep 18-21, 2014, Dayton, OH Contact:

Sherry Mills
P.O. Box 25806,
Colorado Springs, CO 80936
719-380-1412
sherry@acompletetreunion.com

Utapao (Wright-Patterson Reunion) Jul 10-13, 2014, Fairborn, OH Contact:

Michael Golden
2206 South Lumber St,
Allentown, PA 18103
610-797-5053
michaelgolden@rcn.com

Wheelus AB Jun 27-30, 2014, Dayton, OH Contact:

Judy Moore
1214 Evergreen St,
Hillsville VA 24343
276-728-5391
jmmore919@aol.com

AC-47D 'Spooky' Gunship Sep 4-7, 2014, Fairborn, OH Contact:

Michael Worthington
5086 Sweetleaf Dr,
Dayton, OH 45424
937-236-3142
mworthi802@aol.com

AC-119 Gunship Reunion Shadows & Stingers; Air & Ground Crew; 71st, 17th & 18th SOS Sep 17-21, 2014, Albuquerque, NM Contact:

Col Steve Mac Isaac, USAF (Ret)
6449 Coventry Hills Dr, NE
Rio Rancho, NM 87144
505-867-3367 or 302-249-1499
colmacmac@mac.com

Looking for anyone assoc. with AC-119 gunships, 1967 to 1972 in SEA: aircrew, ground crew, support personnel, friends, families, anyone whose bacon we saved!

Aerospace Audiovisual Service/ Combat Camera Service Aug 21-22, 2014, Dayton/Fairborn, OH Contact:

Barb Eagon
5841 East Charleston 230-452,
Las Vegas, NV 89142
702-759-9727
barb@mycactusproperties.com

Arc Light - Young Tiger Jun 15-18, 2015, Fairborn, OH Contact:

Russell Stephenson
4625 Broken Lute Way,
Ellicott City, MD 21042-5959
410-740-8024
rgsteph@msn.com

Assn of Former POWs of Romania Aug 6-9, 2014, Fairborn, OH Contact:

Joni Baldwin
800 Rockcreek Dr,
Centerville, OH 45458
937-428-0774
jbaldwin1@udayton.edu

B-26 Marauder Historical Society National Reunion Oct 16-18, 2014, Akron, OH Contact:

Phyllis Hay
B-26 Marauder Historical Society
3900 E. Timrod St,
Tucson, AZ 85711-4170
502-322-6226
admin@B-26MHS.org

Blindbat C-130A Flarebirds May 19-21, 2014, Las Vegas, NV Contact:

Dennis Miller
2014 Desert Quail Dr,
Las Vegas, NV 89128
702-363-4231
dmillerrr@embarqmail.com

Catholic War Veterans Aug 3-11, 2014, Cincinnati, OH Contact:

Armi Crawford
11330 Woodtown Rd,
Galena, OH 43021
614-738-6341
acrawford123@embarqmail.com

F-15 Gathering of Eagles 42 Jul 24-27, 2014, Fairborn, OH Contact:

Donna Friedman
2508 Cedronella Dr,
Chapel Hill, NC 27514
919-382-7271
donnafriedman@nc.rr.com

F-16 Alumni Association Sep 25-28, 2014, Fairborn, OH Contact:

Sandy Bunn
4153 Sierra Park Terrace,
Beavercreek, OH 45440
937-426-8577
sbunn@woh.rr.com

FB-111 Assn Sep 10-13, 2015, Fairborn, OH Contact:

Curt Nelson
2584 Ridge Rd,
Xenia, OH 45385
937-372-7050
cnelson3@woh.rr.com

Ohio Squadron, Sampson AFB May 15-18, 2014, Fairborn, OH Contact:

Rev John Gray
3660 Brinkman Dr,
Grove City, OH 43123
614-277-3501
revgray@wowway.com

USAF/DOD Firefighters May 15-17, 2015, Fairborn, OH Contact:

Karl Hainisch
1109 Bern Cir,
Anderson, SC 29626
864-556-5951
usaffirefighterreunion2015@yahoo.com

USAF Special Projects Prod'n Facility Sep 28-Oct 3, 2014, Fairborn, OH Contact:

Dick Temple
19899 Naples Lakes Terrace,
Ashburn, VA 20147
703-786-4743
commander77dt@aol.com

Wild Weasels Oct 8-11, 2015, Fairborn, OH Contact:

Larry Lemieux
10497 S 475 W
Williamsburg, IN 47393
937-287-9240
larlemieux@aol.com

Aviation Cadets Nav 64-12,13,14 (James Connally AFB) Sep 11-14, 2014, Fairborn, OH Contact:

Dave Doty
7294 Village Dr,
Mason, OH 45040
513-398-1520
dndoty@zoomtown.com

Aviation Cadets Nav 59-14 (Haringen, TX) Aug 15-17, 2014, Fairborn, OH Contact:
Delmar Pullins
46589 St Rt 248,
Long Bottom, OH 45743-0913
740-985-3669
delvicki2012@windstream.net

OCS-58A Oct 9-12, 2014, Fairborn, OH Contact:
Vincent Haney
6945 Meeker Woods,
Dayton, OH 45414
937-280-4477
frehan@roadrunner.com

PTC-55D Jun 26-29, 2014, Fairborn, OH Contact:
Del Tally
6843 State Park Rd,
Lockhart, TX 78644-4328
512-376-2399
deltally@aol.com

PTC-55K Sep 3-6, 2015, Dayton/ Fairborn, Ohio Contact:
Thomas Roe
P.O. Box 25494,
Patrick AFB, FL 32925
321-777-0219
troeusaf@gmail.com

PTC-56M Apr 23-26, 2016, Fairborn, OH Contact:
John Mitchell
11713 Decade Ct,
Reston, VA 20191
703-264-9609
mitchelljf@yahoo.com

PTC-62A Oct 1-4, 2015, Fairborn, OH Contact:
Dave Tippet
227 Forest Creek Dr,
Bozeman, MT 59718
406-570-8290
dave.tippet@gmail.com

PTC-71-04 (Webb AFB) Oct 1-4, 2015, Fairborn, OH Contact:
Keith Houk
1805 Creekwood Dr,
Troy, OH 45373
937-335-7000
MLH3232@yahoo.com

UPT-65A Craig AFB, AL Oct 9-11, 2014, Fairborn, OH Contact:
Rafael Ramos
431 Ashton Ct,
Beavercreek, OH 45434
937-427-9357
DonQ151@woh.rr.com

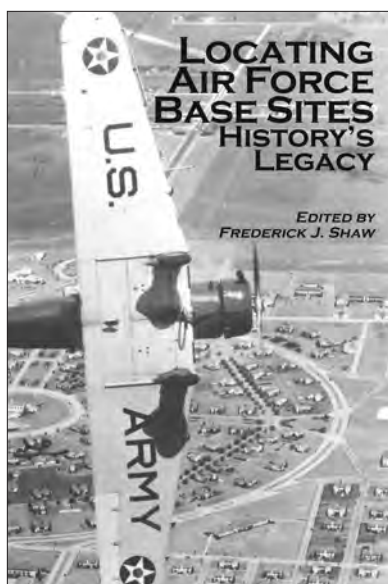
UPT-70-05, Williams AFB Sep 4-7, 2014, Fairborn, OH Contact:
Rick Davis
373 Red Cloud Ln,
Ten Mile, TN 37880
901-277-0603
rickdavisair@gmail.com

USAAC Pilot Classes of WWII Sep 10-15, St. Louis, MO Contact:
Stan Yost
13671 Ovenbird Dr,
Ft. Myers, FL 33908
239-466-1473

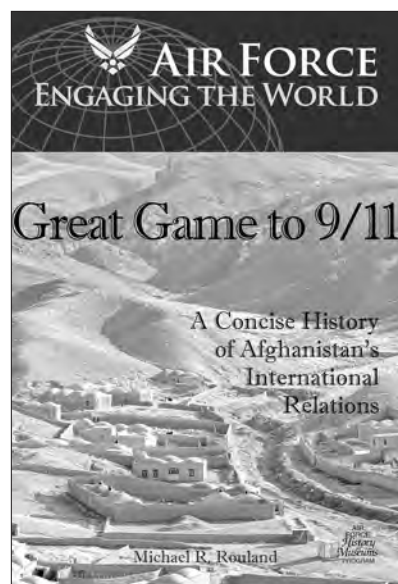
List provided by:

Rob Bardua
National Museum of the U.S. Air Force
Public Affairs Division
1100 Spaatz Street
WPAFB, OH 45433-7102
(937) 255-1386

New Publications from the Air Force Historical Support Division



Two new works from the Air Force Historical Support Division. First, an update to Fred Shaw's 2004 volume *Locating Air Force Base Sites*. Requested by the Air Force Secretary's office, the update covers the 2005 BRAC and the introduction of Joint Basing. The second work is by Dr. Michael Rouland, a former intern in the Air Force Historical Studies Office now working for the Naval Historical Center. His study focuses on the tangled history of Afghanistan and how it has ended up mired in the current turmoil.



Available for download in PDF format at www.afhso.af.mil

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Christopher M. Rein

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“An insightful and much-needed analysis of real-time battlefield adaptation and innovation, Rein’s book allows us to see how American airmen learned and honed the war-fighting skills that are vital—indeed essential—in a modern combined arms setting.”—Tami Davis Biddle, author of *Rhetoric and Reality in Air Warfare*

296 pages, 7 photos, 6 maps, Cloth \$34.95



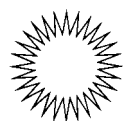
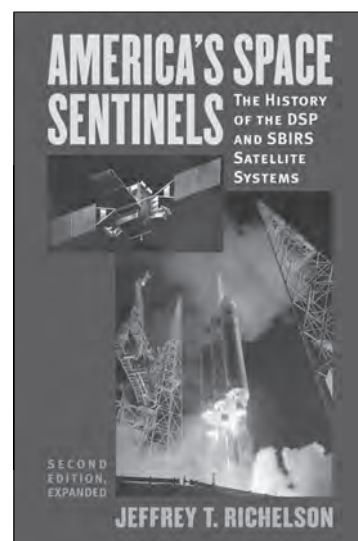
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Letters

Dear Air Power History,

Thank you for your rapid response. Yes I do enjoy your historical morning reports, received here at 0500 and generally the first item I read every morning – I do love things that fly, and the history that surrounds them. My primary research focus is the Manhattan Project (MP) / Project Alberta specifically. Although in this current instance I'm helping a friend Bob Watkins <http://www.ww2battlecolors.com/> hunt down this elusive Arnold "Alaska" patch.

I appreciate your outstanding navigation aid, I was hunting this target in the members area yesterday and don't know how I missed this AP in the left margin. I have secured this 2011 edition requested, and again thank you so much for your help.

With regard to the flight patch, I have already contacted AFHRA, Maxwell and AFHSO Bolling, with Bolling being my big hope as this 1934 mission started from there – no dice from either archive; just another mission piece of Air Force history, for now. This is why I've extended the search looking for the jacket as an artifact at some museum. First on the list was the curator at the March Field Museum, as Arnold was CO here when diverted TDY for this Alaska mission; no reply as yet, but the hunt continues...

While I have your ear, I would be remiss if I did not complement you and

your staff for all that you do. Most noteworthy here is Editor Jacob (Jack) Neufeld and his article selections. For me and my primary focus this was driven home by his acceptance of Darrell Dvorak's articles for the Winter 2012 and Winter 2013 editions. These MP articles were a much needed correction to the current MP narrative, and I am extremely pleased the AFHF thru APH saw fit to publish these critical works. Last but not least is Angela Bear, who was extremely helpful to me as a new member, getting my wheels on the ground.

Warmest regards,

Scott Muselin, Utah

University of Virginia, for eight years after which he worked at the RAND Corporation in Santa Monica, California. He wrote two books, *The Political Economy of National Security* (1960) and *America at Century's End* (1989).

Beginning in 1971, he chaired the Atomic Energy Commission, directed the Central Intelligence Agency, and served as the Nation's first Secretary of Energy. At the time of his death Dr. Schlesinger was chairman of the MITRE Corporation, a member of the Defense Policy Board, a trustee of the Center for Strategic and International Studies, and a trustee of the Henry Jackson Foundation.

He endowed chairs at the University of Virginia, New York University, Harvard University, and Georgetown University. He helped build a concert Hall in memory of his wife, an accomplished violinist. He donated to hundreds of charities, notably birding organizations.

He is survived by eight children and eleven grandchildren.

In Memoriam

James R. Schlesinger
(February 15, 1929 – March 27, 2014)

James R. Schlesinger was born in New York City on February 15, 1929. He died March 27, 2014, at age eighty-five.

Schlesinger earned BSA, MA, and PhD degrees in economics from Harvard University. He married Rachel Mellinger in 1954. Then taught economics at the

Rear Adm. Jeremiah A. Denton, Jr.
USN (Ret.) (1924-2014)

Admiral Denton died on March 28, 2014. He was eighty-nine. A graduate of the U.S. Naval Academy, at Annapolis, Maryland, he was a Navy flyer who survived eight years of captivity in North Vietnam's Hoa Lo prison. Admiral Denton represented American heroism and sacrifice from July 18, 1965 when he was shot down and captured flying his A-6. In 1980 he was elected to the U.S. Senate from Alabama.

Guidelines for Contributors

We seek quality articles—based on sound scholarship, perceptive analysis, and/or firsthand experience—which are well-written and attractively illustrated. The primary criterion is that the manuscript contributes to knowledge. Articles submitted to *Air Power History* must be original contributions and not be under consideration by any other publication at the same time. If a manuscript is under consideration by another publication, the author should clearly indicate this at the time of submission. Each submission must include an abstract—a statement of the article's theme, its historical context, major subsidiary issues, and research sources. Abstracts should not be longer than one page.

Manuscripts should be submitted in triplicate, double-spaced throughout, and prepared according to the *Chicago Manual of Style* (University of Chicago Press). Use civilian dates and endnotes. Because submissions are evaluated anonymously, the author's name should appear only on the title page. Authors should provide on a separate page brief biographical details, to include institutional or professional affiliation and recent publications, for inclusion in the printed article. Pages, including those containing illustrations, diagrams or tables, should be numbered consecutively. Any figures and tables must be clearly produced ready for photographic reproduction. The source should be given below the table. Endnotes should be numbered consecutively through the article with a raised numeral corresponding to the list of notes placed at the end.

Computer-produced articles should be submitted on a CD-R in Microsoft Word or equivalent format, for the PC. Disks should be labelled with the name of the author, title of the article, and the software used.

There is no standard length for articles, but 4,500-5,500 words is a general guide.

Manuscripts and editorial correspondence should be sent to Jacob Neufeld, Editor, c/o *Air Power History*, 11908 Gainsborough Rd., Potomac, MD 20854, e-mail: jackneufeld@verizon.net.

Col. James Helms Kasler, USAF (Ret.) (1926-2014)



One of the United States military's most decorated warriors, Colonel James Helms Kasler (USAF Ret.) passed away in West Palm Beach, Florida on April 24.

Born May 2, 1926 in South Bend, Indiana, James Kasler, husband, father, and quintessential American patriot, is the only person to be awarded the Air Force Cross three times. Colonel Kasler was a combat veteran of World War II, the Korean War, and the Vietnam War.

Enlisting in the United States Army Air Forces toward the end of World War II, Kasler flew eight missions as a B-29 Superfortress tail gunner. With the end of the war, James Kasler used his veteran's benefits to complete his college degree before returning to the newly formed United States Air Force in time to serve in the Korean War. During that war, he flew 100 combat missions in an F-86E Sabre while assigned to the 335th Fighter-Interceptor Squadron of the 4th Fighter-Interceptor Wing and scored six confirmed air to air victories against MiG-15s, becoming the world's fifteenth jet "ace."

After subsequent tours at Seymour Johnson Airbase, Goldsboro, North Carolina, and Bitburg Air Force Base, Germany, the war in Vietnam was escalating and he received his orders. By August 1966, an article in *Time* magazine labeled him "the hottest pilot" in Vietnam and said his wingmates called him "a one-man Air Force". The same week, on his 91st bombing mission in South Vietnam and against Laos and North Vietnam, he was shot down near Hanoi while trying to provide cover for his wingman, who had been shot down ahead of him. When he ejected, his right leg shattered, he was captured and subsequently spent from August 1966 until March 1973 as a guest at the infamous Hanoi Hilton, where he suffered

unimaginable torture. Colonel Kasler flew a combined 198 combat missions.

With a total of seventy-six awards for valor and service, Kasler received the aforementioned three awards of the Air Force Cross, was decorated twice with the Silver Star, a Legion of Merit, nine awards of the Distinguished Flying Cross, two Bronze Star Medals, two Purple Hearts, and eleven awards of the Air Medal. Colonel Kasler's exploits were captured in *Tempered Steel*, a biography written by Perry D. Luckett and Charles L. Byler. Colonel Kasler's Korean aerial battles were highlighted in the History Channel series *Dog Fights*. Colonel Kasler is the subject of numerous books about air warriors. After Colonel Kasler's retirement from the Air Force, he bought and redeveloped the South Shore Golf Course in Momence, Illinois. Colonel Kasler and his wife Martha built a home on the golf course and became valued members of the Kankakee community. A bronze statue was dedicated to Colonel James Kasler by the people of Momence and Kankakee County on September 15, 2007 at the Kasler-Momence Veteran's Park. He is survived by his wife of 65 years Martha Lee Kasler and their three children, James F. Kasler of Pensacola, Fla., Suzanne Kasler Morris and her husband John Morris of Atlanta, Georgia and Nanette Kasler of Carmel, Indiana. His grandchildren are James R., Jacqueline, Alexandra, Kane, Ryan, and Ashley. Colonel Kasler is also survived by his brother Tom Kasler.

A memorial service was held at the Centennial Chapel # 1 University Ave, Bourbonnais, Illinois located on the Olivet Nazarene University Campus on Sunday, May 4. Funeral services were held at Crown Hill Funeral Home & Cemetery, 700 W 38th St, Indianapolis, Ind. on Friday, May 16. In lieu of flowers, the family is requesting that donations be made to one of the following charities: the James and Martha Kasler Scholarship Fund for Nursing Excellence at Riverside Hospital 350 N Wall St, Kankakee, Ill.; the Indiana War Memorial Foundation 431 N Meridian St, Indianapolis, Ind.; the Salvation Army; Folds of Honor Foundation, 5800 N Patriot Drive, Owasso, Okla.

Published in The Atlanta Journal-Constitution on May 2, 2014

**Lt. Col. David MacIsaac, USAF (Ret.)
(1935-2014)**



Dr. David MacIsaac, a treasured military history professor at the Air Force Academy passed away peacefully in his sleep on March 25, 2014. Dave served twenty-three years in the Air Force, retiring in 1981. He was raised in Somerville, Massachusetts and held degrees from Trinity College, Yale University, and Duke University. He studied at Duke when it housed the premier military history department in the United States under professors Ted Ropp and Bill Holley. Dave had four tours at the Academy, leaving in 1978 as tenured professor and Deputy Head of the History Department to an assignment as a Fellow at the Woodrow Wilson International Center for Scholars in the nation's capital, one of the most prominent think tanks in the world. Upon leaving Washington he became Chief, Military History Studies at the Air War College, Maxwell Air Force Base, Alabama. During his Air Force career, he also served three years in Spain and one year in Vietnam.

Dave continued to serve the Air Force after retirement as a civil servant. He was Senior Research Associate at the Air Power Research Institute, in the Center for Aerospace Doctrine, Research and Education, and later Associate Director of the Airpower Research Institute and Professor of Military History. Over Dave's long career as an exceptionally distinguished mili-

tary historian and professor, he taught the intrinsic value of military history—the only school for the soldier—and also the value and shortcomings of air power to many students who became the most senior leaders in the Air Force and also other services who he reached in his various positions at the Air University.

Dave was also an outstandingly capable researcher and writer and was widely published. His *Strategic Bombing in World War II: The Story of the U.S. Strategic Bombing Survey* is a classic. The book is fluidly written, objective, and extraordinarily informative. One review of this essential study said: "David MacIsaac covers the United States Strategic Bombing Survey very well [and] also gives an excellent review of the Survey's underlying subject: the bombing campaigns directed against Germany and Japan in World War II. The survey's conclusions and the evidence for them are clearly set out, but MacIsaac also looks at the evidence accumulated since then to see if the said conclusions stand the test of time." Because of his stellar work on the Strategic Bombing Survey, Dave was chosen to edit the ten volume series by Garland Publishing: *The United States Strategic Bombing Survey: Selected Reports* found in sound military history libraries. Dave also published numerous anthology chapters in significant books, for example "Voices from the Central Blue: The Airpower Theorists" in Peter Paret's *Makers of Modern Strategy From Machiavelli to the Nuclear Age* published by the Princeton University Press, and "The Evolution of Air Power since 1945: The American Experience" in Tony Mason's *War in the Third Dimension: Essays in Contemporary Air Power* published by Brassey's. Dave left us a significant library (and warm memories), for which we are grateful.

An appreciation by Dr. Alan Gropman

Lt. Col. James A. Goodson, USAF (Ret.) (1921-2014)



James Goodson wanted to see the world in the summer of 1939, so he boarded a ship and made his way across the Atlantic to Europe by working as a pantry boy. A few months after Mr. Goodson arrived, Joseph P. Kennedy Sr., the U.S. ambassador to England, urged all American expatriates to return home because of the looming threat of war. Mr. Goodson, who died May 1 at 93, booked passage on one of the last ships to leave England before Europe convulsed into world war. The vessel was the ill-fated liner *Athenia*, which on Sept. 3, 1939, was torpedoed and shelled by a German U-boat off the Scottish coast. More than 100 of the roughly 1,300 passengers and crew members perished before rescue boats arrived. Mr. Goodson and other survivors were taken to port in Galway, Ireland, where children from the ship wept for their missing parents and many adults were inconsolable. One woman said she saw two children fall from a lifeboat as it was lowered into the chilly water. They were never seen again. Mr. Goodson was on the *Athenia's* deck when the torpedo struck, and he recalled assisting with rescue efforts as the ship listed and its lights went dark. "I went to see if there were people trapped in the main section, and I saw dead bodies swooshing around in the water," he later wrote. "I was plunged into the whole war thing, if you like, in a matter of minutes. I suppose Americans looked at the European war as something that didn't much concern them."

The sinking of the *Athenia* — an early victim in the Battle of the Atlantic — helped turn world opinion against Germany. For Mr. Goodson, it was the moment when he decided to do his "bit to stamp out Nazism." He went on to become a leading Army Air Forces ace in the European theater, with 15 aerial kills and another 15 straf-

ing kills of enemy aircraft on the ground. His success brought him the nickname "King of the Strafers," said Roy Heidicker, an Air Force historian

After the war, the newly formed Air Force counted only air-to-air victories in tallying aces. Francis S. Gabreski, with 31 kills (including three on the ground), was the leading Army Air Forces ace in Europe during the war; Richard Bong, an Army Air Forces pilot in the Pacific, was the highest flying ace overall, with 40 hits.

Mr. Goodson, who was American-born and was raised in Toronto by British parents, had been among the first U.S. volunteers to enlist in Britain's Royal Air Force. He initially flew in one of three "Eagle" squadrons, RAF units made up of American pilots. By the summer of 1942—many months after the United States entered the war—the Eagle squadrons were incorporated into the 4th Fighter Group of the U.S. Army Air Forces. Mr. Goodson recorded two kills as an Eagle squadron member, but he had his best-known exploits with the 4th Fighter Group under the hard-driving, taciturn commander, Donald Blakeslee. During Blakeslee's tenure, the 4th Fighter Group racked up one of the most remarkable records of the war, destroying a total of 1,016 enemy aircraft on the air and on the ground, Heidicker said. By the fall of 1942, the 4th Fighter Group represented the only operational American fighting units in Europe. Mr. Goodson conducted one of the first American-led, low-level strafing sorties over France and Belgium, a two-man, two-plane mission. He and his partner considered the results to have been modest. But military publicists, looking for scraps of good news, trumpeted the affair as "the first U.S. fighter raid over the Continent" and "daring low-level attacks on rail, road and water transport in Northern France and Belgium, leaving behind them a trail of destruction."

He received the Distinguished Service Cross—the military's highest award for valor after the Medal of Honor—for his actions as a P-47 Thunderbolt pilot on March 16, 1944, while escorting U.S. bombers in a raid over Berlin. In Germany, he encountered an overwhelming number of enemy Messerschmitt Bf 109s trying to pick off the bombers. According to the award citation, Mr. Goodson dived after the Messerschmitts and knocked out two while weaving in and out of the line of fire.

That June, he was in his P-51 making a strafing run over a German airfield when he was shot down. He fled into a birch forest before collapsing from injuries. He eventually was caught by the Germans and threatened with execution. He recalled that one captor asked him if he wanted a drink or another indulgence before being shot. Mr. Goodson spied a box of Havana cigars, asked for a stogie and began to blow smoke rings, which he said shocked the German and led to a conversation about their mutual interest in cigars.

"The guy had never seen anything like that," Mr. Goodson once said in an interview, "and I started teaching him how to blow smoke rings." Instead of being shot, he was sent to a prisoner-of-war camp. "People say smoking costs lives," he said. "It saved my life."

James Alexander Goodson, known as "Goody," was born March 21, 1921, in New York City. In Toronto, he was studying languages when he set out for Europe. After being held at POW camps in Poland and in Germany, he was repatriated in April 1945. His honors included the Silver Star, nine awards of the Distinguished Flying Cross, the Purple Heart and 21 awards of the Air Medal. He retired from the Air Force Reserve with the rank of lieutenant colonel.

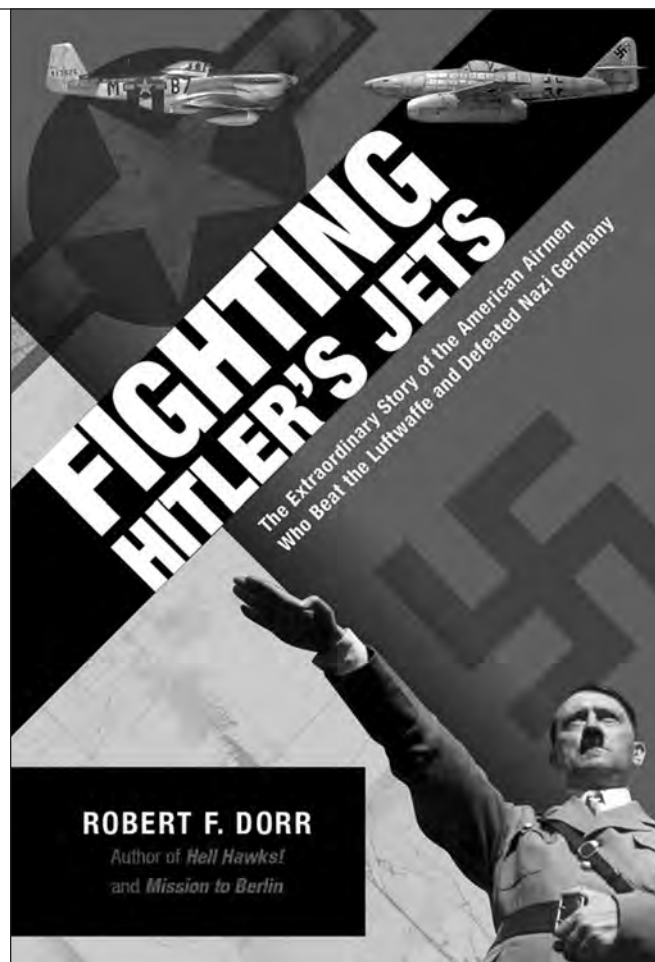
Following his wartime discharge, Mr. Goodson became an executive with Goodyear, Hoover and the conglomerate ITT. He wrote a memoir, "Tumult in the Clouds," published in 1983. His wife of 62 years, the former Gwendolyn Rice, died in April. Survivors include a son, James Goodson Jr. of Marshfield, Mass.; and three grandchildren. Mr. Goodson had pneumonia and died at a hospital in Plymouth, Mass., his son said. Mr. Goodson was a resident of Duxbury, Mass.

He once told the Boston Herald that, as a POW, he was visited by a group of German aces in a display of respect. "It was a different time," he said. "That's all gone now."

By Adam Bernstein, Published: May 1 in Washington Post.

Technical editor Robert F. Dorr is offering signed, first-edition copies of his new book *Fighting Hitler's Jets* at a reduced price to readers of this magazine on a not-for-profit basis. The book is a character-driven narrative of the experiences of Americans battling Germany's "wonder weapons" during World War II. Contact Bob at (703) 264-8950 or robert.f.dorr@cox.net

Note: Bob is also offering copies of his new World War II book *Mission to Tokyo* to APH readers on a not-for-profit basis at half price. Contact Bob at robert.f.dorr@cox.net or (703) 264-8950.





The mystery aircraft in our last issue was the Douglas F5D Skylancer all-weather fighter.

Douglas Aircraft Co. was the maker of the U.S. Navy's F3D Skyknight and F4D Skyray, so it seemed natural that Edward Heinemann's design team would conceive a follow-on fighter. The Skylancer design began life on the drawing board as a version of the Skyray, designated F4D-2N but before its first flight on April 21, 1956, evolved as a distinct design with an identity of its own, built around the 10,200-pound thrust Pratt & Whitney J57-P-8 turbojet engine. The J57 can be credited with rescuing the Navy from a family of Westinghouse powerplants that produced disappointing results in the early 1950s.

In fact, the J57 became standard on successful fighters, including the Navy's Vought F8U Crusader and the Air Force's North American F-100 Super Sabre.

Nevertheless, the J57 was not what designer Heinemann wanted. "Many people believe the Skylancer was a faster and better choice than its competitor the F8U Crusader," said Steve Ginter,

author of a book about the Skylancer. "They believe it had inherently better stretch potential to the point where it could have outperformed the F4H Phantom II [later introduced in 1959] if the J79 engine had been installed as envisioned by Ed Heinemann."

But the Skylancer never flew using the 12,500-pound thrust General Electric J79, which performed well on the Air Force's Lockheed F-104 Starfighter. Later, the Phantom used two J79s.

The Skylancer was 53 feet 8 inches from nose to tail, almost ten feet longer than the Skyray. It was credited with flying 1.63 times the speed of sound, or about 1,000 miles per hour at high altitude. The Navy studied weapons configurations with Sparrow and Sidewinder missiles, guns, and bombs.

The Navy ordered 19 Skylancers, changed its mind, and acquired just four. After comparing prospects for the two planes, the service decided to invest heavily in the F8U Crusader, ending the Skylancer's prospects. The Skylancer never operated aboard an aircraft carrier and was never tested with live armament.

After the Navy's 1957 decision not to proceed with the Skylancer, two of the planes conducted research programs for the National Advisory Committee for Aeronautics and its successor, the National Aeronautics and Space Administration. A civilian test pilot who flew one of the planes for NASA was former naval aviator Neil Armstrong, later the first man to walk on the moon. Today, a Skylancer is displayed at the entrance to the Neil Armstrong Museum at Wapakoneta, Ohio.

Our History Mystery winner is Robert Hachette of Chatsworth, California. He'll receive a copy of the World War II history "Mission to Tokyo" as his prize.

But Robert's was one of only three entries we received. Now that it has passed the quarter-century mark, has the History Mystery run out of lift? Contact us and let us know whether to continue.

And if we do continue, it's time to challenge you to identify our new "History Mystery" aircraft. Remember the rules:

1. Submit your entry via e-mail to robert.f.dorr@cox.net. Entries may also be submitted on a postcard to Robert F. Dorr, 3411 Valewood Drive, Oakton VA 22124.
2. Remember: we need your address and phone number.
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 readers say they just don't remember where their color slides are. That's not a good way to assure the preservation of history. Dig out your slide or

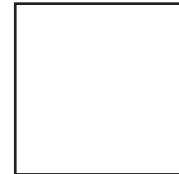
snapshot of a rare aircraft and lend it to *Air Power History* for this contest



This Issue's Mystery Plane



Air Force *Historical* Foundation
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