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COVER: Artist's rendering of the Air Force Memorial, currently under construction.*(Picture courtesy of the AFM Foundation.)*

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From the Editor

John Plating's article, "Cannon, Egg, Charlie and Baker," leads off this issue of *Air Power History.* It links the end of World War II to the postwar fight for control between Chiang Kai-shek's Nationalists and Mao Zedong's Communists. Here American airlift enabled Chiang and his forces to avert a Communist takeover. Four years later, with U.S. air power absent, Mao prevailed.

Our Moscow correspondent, Viktor Kulikov, scores again with, "Cobras Join the Battle," his account of how the Red Army's air force adapted to flying the Bell P–39 Aircobra and P–63 Kingcobra. He details the import of the American fighters through Lend-Lease and later through various direct routes. Kulikov follows the planes from their arrival in the Soviet Union, to assembly, testing, modification, training, more modification, and then combat. Although the P–39 and P–63 did not have many U.S. proponents—it was beset with many technical deficiencies—the Soviet airmen loved the planes and flew them with great success against the Luftwaffe. Kulikov's photo gallery of men and planes is also superb.

Air Force historian Forrest Marion next tells what happened on April 28, 1965, when Communist MiG–17s attacked an American RB–47 on a reconnaissance mission over the Sea of Japan. In "A Hot Day in a Cold War," Marion examines the possible attackers and their motivation. I urge you to read the story and decide for yourself.

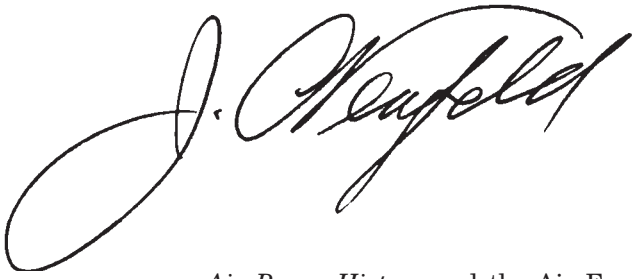
The fourth article is by British historian A.D. Harvey, who investigates the adage that "necessity is the mother of invention," specifically whether wartime combat speeds technological progress. Beginning before World War I and continuing through World War II, Harvey finds little evidence to support the conventional wisdom.

Finally, George Larson celebrates the seventieth anniversary of a largely-forgotten balloon flight. On November 11, 1935, the U.S. Army Air Corps launched the Explorer II balloon from the Strato Bowl in the Black Hills of South Dakota. Find out why the craft, which rose to nearly 73,000 feet, may have represented the first space race.

As usual, we present a bushel full of new books reviewed by our cadre of book readers. You may join their ranks by contacting Scott Willey. See page 60. There's an important message concerning a revised dues structure (see page 62), in which you may wish to participate. Also, an ad hoc committee read and reviewed all of the articles published last year and chose one for special recognition. Turn to page 63 to learn who won.

The "Letters to the Editor" section (pages 64-65) contains a greater than usual mailbag, indicating that this journal is being read and by people who are connecting with the contents. After perusing these letters, you may be stimulated to write one too.

On a somber note, we mark with deep sadness the death of Maj. Gen. Ramsay Potts, USAF (Ret.), a great family man, war hero, jurist, and former president of the Air Force Historical Foundation. I feel privileged to be among those who knew General Potts. His friend and colleague, Maj. Gen. John Huston, has penned a tribute to him beginning on page 66.



Cannon, Egg, Charlie an
between World War II a

d Baker: Airlift Links nd the Chinese Civil War

John D. Plating

(Overleaf) C–47s line up on the runway.

(Right)Chiang Kai-shek

It was a muggy evening in Chongqing,[1] the wartime capital of Chiang Kai-shek's Chinese Nationalist government. Chiang was dining with the new Chinese ambassador to Mexico, when the meal was interrupted by the news of the Japanese Emperor's radio broadcast, a broadcast announcing Japan's decision to accept the Allies' terms of surrender. On its face, this announcement was good news for Chiang. He had been dealing with Japanese aggression for nearly a decade and a half, first in the annexation of Manchuria in 1931, then in outright war since 1937. But the Japanese were not Chiang's real enemy; to him they were only "a disease of the skin." His real nemesis—what he referred to as China's "disease of the heart"—was the Communist Party under the leadership of Mao Zedong. The surrender would rid China of over one million Japanese soldiers, but in doing so it would also create a vacuum that would be filled either by Chiang's Nationalists or Mao's Communists.

Herein lay Chiang's problem: Mao's army of nearly one million was located in and around Japanese-occupied areas, areas that practically dominated the entire 2,000-mile eastern coast of China. As such, the Communists were in a better position than the Nationalists (or Guomindang, GMD for short) to receive the forthcoming Japanese surrender, but to Chiang, Mao's armies were nothing more than a dangerous group of "bandits." Making matters worse, the bulk of Chiang's armies were scattered as far as 700 miles away from key Japanese strongholds and were in no position to accept the surrender that came so abruptly.

Chiang had to work fast. If he didn't move his troops to northeastern China, Japanese commanders would surrender to Mao's generals putting the Communists in control of China's strategic east coast. Chiang's armies had to be moved hundreds of miles over a rugged Chinese interior in a matter of weeks—if not days—to check this imminent Communist victory. His only option to prevent defeat lay in the use of air transport to get his armies to pivotal cities like Shanghai, Nanjing (Nanking), and Beijing (Peiping). If time was Chiang's greatest enemy, the presence of the massive American "Hump" airlift force, based in eastern India and western China was his greatest ally and best option in circumventing a *de facto* Communist takeover.

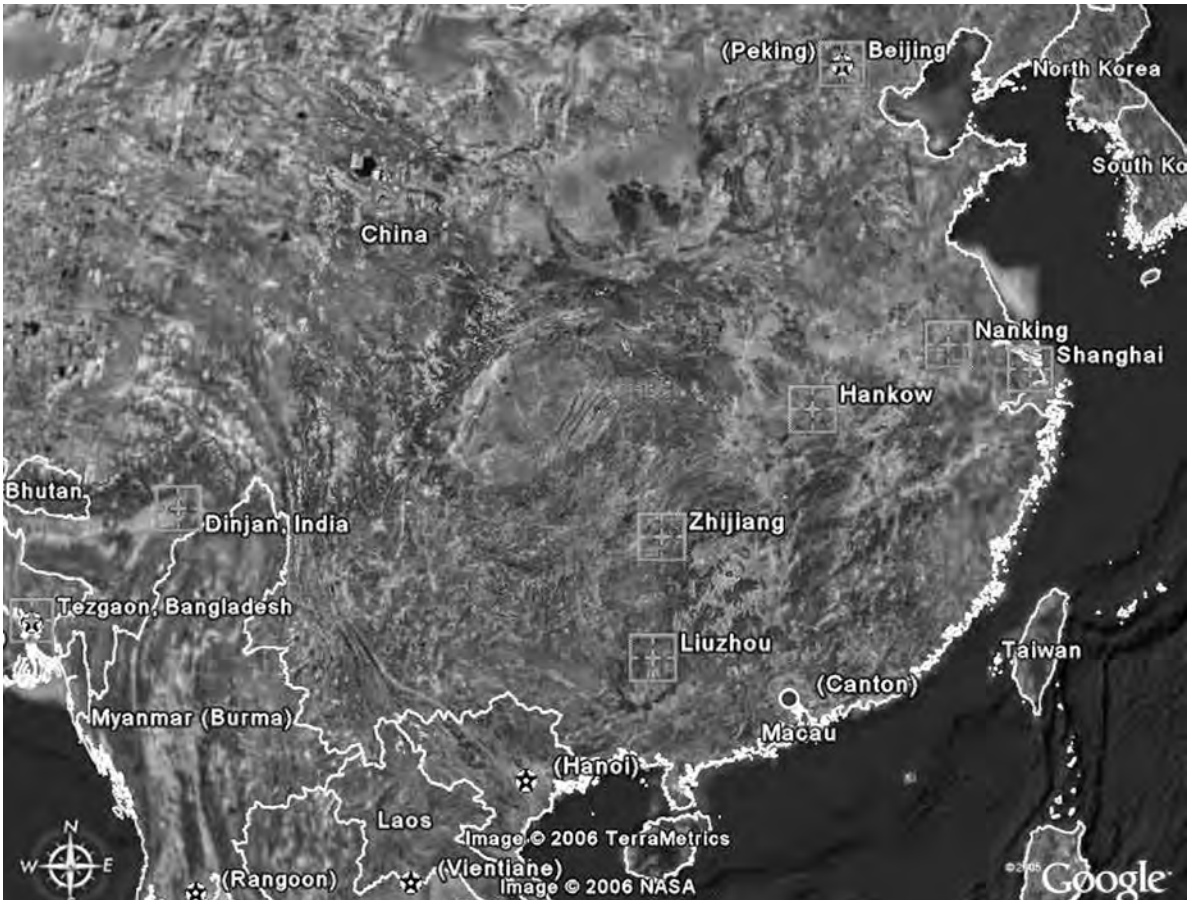
TO CHIANG, MAO'S ARMIES WERE NOTHING MORE THAN A DANGEROUS GROUP OF "BANDITS."

Gen. Albert Wedemeyer, the senior American commander in China, had been cajoling Chiang for months to plan for an imminent Japanese surrender. "We are striving to prepare for any eventuality reference Japanese capitulation," Wedemeyer wrote in an August 1 message to the U.S. Army's

commander, Gen. George Marshall. In the message Wedemeyer went on to say that American forces were making preparations for the war's end, but that he was concerned that the Chinese government was paying too little attention to this "eventuality." "If war comes suddenly, it is reasonable to expect widespread confusion and disorder. The Chinese have no plan for rehabilitation, prevention of epidemics, restoration of utilities, establishment of a balanced economy and reposition of millions of refugees." Wedemeyer had recently established a school in Chongqing (Chungking) to teach Chinese officials rudimentary civil affairs skills, and had also "emphasized to the Generalissimo the necessity of advanced planning." Despite these efforts, Wedemeyer's outlook was less than cheery, as he was "not optimistic about the results to be attained."[2]

But Chiang's lack of attention towards the quick restoration of Chinese society to its pre-war state was not simply a case of strategic short-sightedness. He did need to pay attention to the issues highlighted by Wedemeyer—utilities, medical care, and refugees to name a few—but the Generalissimo's first concern was to deal with the Communist problem, and to do so by reasserting Nationalist influence in China's cosmopolitan seats of power, namely Nanjing, Shanghai, and Beijing. Operating from this assumption and prompted by a flurry of events set in motion by the Soviet invasion of Manchuria, he met with Wedemeyer on August 11 to ask for troops to occupy these and

Lieutenant Colonel John D. Plating, USAF, is a Ph.D. candidate at the Ohio State University, currently working on his dissertation on the trans-Himalayan "Hump" airlift of World War II. He is a Senior Pilot with more than 2,300 hours of flight time in C-130Es (AWADS), T-1As, and T-37Bs, including both instructor and combat time. He is a graduate of the United States Air Force Academy, where he has also served on the faculty of the Academy's History Department. He earned his MA degree at Ohio State, and is also a graduate of Air Command and Staff College.



FOLLOWING THE JAPANESE ANNOUNCEMENT OF SURRENDER, THE NATIONALISTS CONTROLLED ONLY 15 PERCENT OF THE COUNTRY. IN LESS THAN A YEAR THEY WOULD CONTROL NEARLY 80 PERCENT

Operation	Unit Moved	Origin	Destination	Airlift Unit	Dates/Duration	# of Troops
Cannon	94th Army	(Tezgaon) Liuzhou	Shanghai	India-China Div. (ATC)	6 Sep./18 days	26,237
Egg	6th Army	Zhijiang	Nanking	443rd Troop Carrier Gp.	6 Sep/26 days	32,685
Charlie	92nd Army	Hankow	Beijing	443rd Troop Carrier Gp.	15 Oct./11 days	25,491
Baker	94th Army	Shanghai	Beijing	513th Troop Carrier Gp.	15 Oct./12 days	22,701

other coastal cities, as well as for help transporting his own troops to the east to help stave off a civil war.[3] While Wedemeyer was unable to help Chiang with his request for an army of occupation, he was able to meet Chiang's transportation needs. The War Department had already directed Wedemeyer to help the Nationalists with whatever airlift requirements they had to get in position to accept a possible Japanese surrender. But in the same directive, the War Department also emphatically stated that it held firm to the "principle that the American government would not support the Chinese [Nationalist] government in civil war."[4] These two orders put the American commander in a pickle—they directed U.S. air transports to help in positioning Nationalist troops to accept the surrender, but in doing so, this positioning also helped them to hurdle hundreds of miles of difficult terrain to get in place to confront their Communist opponents.

None of this escaped Wedemeyer. Though he had been in the theater for slightly less than a year, he was fully cognizant of Chiang's priorities and also saw that it was impossible to help the Nationalists regain control of eastern China without enhancing their position with Mao's armies. Recalling after the war Wedemeyer stated:

I was not permitted, for example, to pick up a Chinese army at point A and move it to B to facilitate the recovery of an area from the Commies by the Chinese Nationalist forces; I was not authorized to use my aircraft for that purpose. But in the process of moving them, I did exactly that. It was inherent in my instructions that I should recover areas formerly occupied by the Japanese, so I had to move them into areas that were vacant, and that did cause some friction with the Chinese Communists…Incidentally, sir, it improved the position of the Chinese Nationalists vis-à-vis the Chinese Communists, too.[5]

At the time immediately following the Japanese announcement of surrender, the Nationalists controlled only 15 percent of the country. In less than a year they would control nearly 80 percent. And while not all of these troops were repositioned by

Brig. Gen. William H. Tunner.

THE ENTIRE ROUTE FROM LIUZHOU TO SHANGHAI WAS OVER JAPANESE-OCCUPIED TERRITORY, MEANING THERE WERE NO OPPORTUNITIES FOR REFUELING OR AIRCRAFT REPAIRS

air transport—many were later moved along the coast by U.S. naval and merchant ships—the American airlift gave Chiang an unprecedented capability to rapidly move his armies at just the critical moment to check the encroaching Communists.

The Communists, under the political leadership of Mao Zedong and military leadership of Gen. Zhu De, began making moves on August 8, the day after the Soviet invasion of Manchuria. Mao took the Soviet attack as a signal for him to begin the third and final stage of his war in China, a conventional campaign against GMD forces. "To whom should the fruits of the victory of the war of resistance belong?" asked Mao rhetorically, as General Zhu ordered four Communist armies to begin marching north to link up with the Soviets. At the same time, Zhu's forces also began securing roads, railroads and bridges in preparation to move their forces into Nanjing, Shanghai, and Beijing. Three days later Chiang denounced Zhu's movements as "an abrupt and illegal action," telling his troops "to remain in their posts and wait for further instructions" and told Zhu to "never again to take independent action." The Communists responded to Chiang's so-called "order" by broadcasting a message from their base in Yan'an, calling Chiang a "Fascist chieftain," declaring that the Nationalists "treat enemies as friends and friends as enemies."[6] General Zhu followed up the Yan'an broadcast with two telegrams the next day: one to Chiang, telling him "you have issued the wrong order, very wrong indeed, and we have to reject it resolutely," and the other to Gen. Yasuji Okamura, the commander of all Japanese forces in China, demanding that he surrender immediately to the Red Army.[7] Chiang countered these rhetorical salvos by then appealing to the Americans for help, at which point Gen. Douglas MacArthur, the senior allied commander in the Pacific, reiterated the terms of the Yalta and Potsdam agreements that required the Japanese to surrender only to Nationalist government troops. MacArthur's statement, dubbed "General Order Number One," gave Chiang control of Japanese-occupied China, though only on paper. It was up to the U.S. to move his armies to make it a reality.

Two separate U.S. Army Air Forces commands in theater were tasked with the initial airlift of troops: Brig. Gen. William Tunner's India-China Division of Air Transport Command (ATC), and Brig. Gen. Albert Hegenberger's 10th Air Force cargo division. Of the two, Tunner's task was the more logistically challenging, as he was to move the Chinese 94th Army from Liuzhou to Shanghai—a trip of over 900 miles—while operating his aircraft from Tezgaon Airbase in Bengal, India, a field over 1,200 miles from Liuzhou (see map page 7).[8] Tunner was well-suited for such a task. His men called him "Willy the Whip," probably in response to his demands for greater production. (Tunner later became best known for directing the Berlin Airlift.) His most difficult challenge with this lift, though, was the fact that the entire route from Liuzhou to Shanghai was over Japanese-occupied territory, meaning there were no opportunities for refueling or aircraft repairs once his crews got into central China. To make matters worse, there was no aviation gas in Shanghai, nor would there be for several weeks until Allied ships arrived in port. Tunner vividly sums up the problem in his memoirs saying, "Suppose, for example, that our planes

Douglas C–54.

TUNNER HAD HIS CREWS FLY THE BENGAL WING'S FOUR-ENGINE C–54s ...OVER THE HIMALAYAN "HUMP" TO LIUZHOU, OFF-LOAD THE FUEL, ON-LOAD 80 TO 85 NATIONALIST SOLDIERS, AND TAKE ON ONLY AS MUCH FUEL AS WAS NEEDED FOR THE ROUND-TRIP TO SHANGHAI

were based in Los Angeles, that thirty-thousand Chinese were to be flown from Atlanta to Boston—and that there was not a drop of gasoline nor one item of equipment or aircraft parts east of the Rockies. That would just about size up the situation." To manage the lack of fuel, Tunner had his crews fly the Bengal Wing's four-engine C–54s loaded with 55-gallon drums of aviation fuel from eastern India over the Himalayan "Hump" to Liuzhou, off-load the fuel, on-load 80 to 85 Nationalist soldiers, and take on only as much fuel as was needed for the round-trip to Shanghai. The crews then flew the troops to Shanghai and returned to Liuzhou to take on any necessary fuel to make it back to Tezgaon.[9]

Tunner called the airlift operation the "Cannon Project," named after the Bengal Wing Commander Col. Andrew Cannon, the man responsible for solving the difficult refueling conundrum and who commanded the crews who flew the missions. His wing used between 50 and 60 Douglas C–54s—a militarized version of the DC–4 Skymaster—to complete the operation in just over three weeks. Preliminary crews arrived in Shanghai on September 3, inspecting its two airfields—Kiangwan and Ta-chang—to ensure they were adequate for the job. The Army Airways Communication Service then delivered navigation and communication radios to help establish air traffic control around the greater-Shanghai area. The arrivals were set to begin on the fifth, but were delayed a day due to a hurricane off the east coast of China. As such, the first regiment of Nationalist troops began arriving on September 6,[10] kicking-off what the New York *Times* reported as "the greatest airborne movement of troops in Asiatic history."[11]

The arrival of U.S. aircraft loaded with Chinese troops prompted a lot of excitement from the city's population—a population that had been under Japanese occupation for almost eight years. Crowds of cheering locals greeted the arriving planes, though sometimes to their detriment, as a fair number were killed when they got in the way of arriving or departing C–54s. American crews did their best to steer clear of pedestrians, but the early days of the operation saw very little security around the airfield—after all, the abdicating Japanese cared little about controlling local Chinese, a job that was left for the very soldiers arriving on the in-bound airplanes. And if airfield control in Shanghai was dicey business for the American aircrews, the four-to-five hour flight from Liuzhou to Shanghai was not easy for Chinese soldiers who had never before ridden in an airplane; post-mission reports record that the planes were a "mess upon arrival at Shanghai, as they reeked with unpleasant odors, which emanated from vomit and dirt and filth."[12]

Boarding the planes in Liuzhou, the poorly fed and supplied 94th Army was still reeling from the Japanese Ichi-go Offensive of the previous year. Malnourished, unwashed, and feebly supplied, many of the soldiers had no boots and wore only sandals with no socks or leggings. Their uniforms were tattered, lice infestation was the norm, and only a few men weighed over 120 pounds. Add to this a summertime flight in turbulent skies over rocky terrain, and one has a recipe for airsickness writ large. Tunner records the near-comical contrast between these "bedraggled" Chinese troops arriving in Shanghai and the well-fed, "fine-looking" Japanese soldiers they met at the airport, as

Curtiss C–46.

MAKING OVER 400 TRIPS AND TRANSPORTING OVER 26,000 TROOPS OVER OF THE 4,600-MILE ROUTE, THE AIRLIFT WAS HAILED AS A SUCCESS

the Japanese must have been thinking, "*How in the world did we lose to troops like these?*"[13]

The ATC crews of the India-China Division completed the Cannon Project on September 29, sixteen days ahead of schedule and undoubtedly spurred along by the incentive that they would be allowed to rotate back to the U.S. once the job was done. Making over 400 trips and transporting over 26,000 troops over of the 4,600-mile route, the airlift was hailed as a success. At the same time these ATC crews were delivering troops to Shanghai, China's financial capital, Hegenberger's Tenth Air Force crews were delivering troops to the country's prewar political capital in Nanjing. Towards the end of August, the Tenth Air Force's 443d Troop Carrier Group stationed in Dinjan, India, was tasked to move to Zhijiang (Chihchiang), China, more than 900 miles east. The reason for the move was to co-locate the 443d with the Chinese Sixth Army, an American-trained and supplied force of over 32,000 men who had distinguished themselves in driving the Japanese out of Burma. The 443d was first formed as part of Combat Cargo—"Comcar" for short—an air transport idea of General "Hap" Arnold. Arnold's idea was to create autonomous air transport units that could operate under austere and often dangerous locations, based close to enemy lines. They could then be used to drop commando-type soldiers deep into Japanese-held territory, as well as keep those troops supplied by air. After Burma was retaken by the Allies in the summer of 1944, these airlift units were gradually reclassified as "troop carrier" squadrons; and though their missions became more like the standard work-a-day airline-type flights of ATC, they still retained the ability to uproot themselves and move from one place to another in a matter of days. In the case of the 443d, they were to move hundreds of miles into China for the express purpose of moving the Sixth Army to Nanjing.

The 443d arrived in Zhijiang at the end of August and began flying soldiers to Nanjing on September 5 in an operation dubbed "Egg Movement." The unit flew Curtiss-built C–46s, the twin-engine cargo plane that was the theater-standard for airlifters by the end of the war. It could haul between 30 and 45 soldiers (depending on the amount of extra equipment), and often had to load 55-gallon drums of fuel in the cargo compartment to make up for the shortage of fuel in Nanjing. The 635-mile trip took up to three hours, one way, as the passengers, though better fed and supplied than those lifted by "Cannon," were no less prone to waves of airsickness, making for a messy cargo compartment. The Egg Movement went off without a hitch, except for one disaster in the early hours of September 14 when a fully-loaded plane took off from Zhijiang and crashed into a 500-foot hill a mile off the end of the runway killing the crew and all 36 Chinese passengers. The cause of the accident was never discovered, though it is likely that the plane lost power in one or both engines, causing it to descend into the hills off the departure end of the runway.

"Egg" was complete after only twenty-five days, as the entire Sixth Army was ferried to Nanjing to buttress the Nationalist presence in the acceptance of the Japanese surrender. Altogether the Egg and Cannon airlifts transported nearly 59,000 GMD troops were moved hundreds of miles to critical areas in the north of China, checking what might otherwise have been an easy Communist takeover.

Curtiss C–46.

THEY HAD APPARENTLY LANDED IN THE MIDDLE OF A BATTLE

One historian has suggested that Chiang was foolish to leap-frog his armies in this way, stating that he should have instead massed his troops in the southwest and slowly marched to the northeast, consolidating his power among the Chinese peasantry as he went.[14] But this was not an option for Chiang. Nanjing and Shanghai were his country's symbols of national power—to freely abdicate them to Mao's armies was simply unthinkable. And so long as he had the strategic asset of American air transport at his disposal, he would milk that advantage for all it was worth until the U.S. government brought it to an end.

The formal Japanese surrender was held in Nanjing on September 9, in a twenty-minute ceremony conducted at the city's Military Academy. Gen. Ho Ying-chen represented the Nationalist Army, while Okamura signed for the Japanese, as Chinese officials—in an act of diplomatic humiliation—reportedly had the Japanese delegation sit in chairs noticeably lower than their own. The Truman Administration promised him 50,000 Marines scheduled to arrive in Shanghai at the end of September. This influx of Americans—the first ever U.S. military intervention to follow the war—freed Chiang to then move his own soldiers further north into Beijing in an effort to press into territory rife with Communist cadres. He again wanted to move two entire armies, the 92d based in Hankow and the 94th, the army freshly transplanted to Shanghai by the Cannon Project. Both moves began on October 15; the first was tasked to the 443d (of the "Egg Movement"), as the unit again moved itself, this time from Zhijiang to Hankow to begin the airlift of the 92d Army to Beijing, an operation called "Charlie Movement."[15]

THEY HAD BEEN WAVED TO SAFETY BY A PLATOON OF JAPANESE SOLDIERS

Charlie was similar to Egg in that the C–46 unit was only tasked to move Chinese troops and their immediate equipment. Unlike Egg, where planes were limited to between 30 and 45 troops per load, aircraft on Charlie regularly carried loads of 55 troops, thanks to the availability of gasoline in Beijing. The crews were able to trade the fuel-weight for troop-weight, and fly with only the minimum amount of gas to make it from Hankow to Beijing. And while this made the lift go much faster—well over 25,000 troops were moved in only ten days—it made for a much more uncomfortable ride for the cramped Chinese passengers.

The weather also became a factor as summer gave way to autumn. Poor visibility and low ceilings became problematic only a couple of days into the operation. Bad weather forced three empty planes returning from Beijing to divert to a field in Paotang, a city located along the Hankow-Beijing railroad. The crews landed, parked, and exited their planes to wait out the bad weather. Upon leaving their C–46s, they immediately came under small arms fire, as they had apparently landed in the middle of a battle between Communist and Nationalist troops. As they looked for cover, they noticed some soldiers who were motioning them to hide in some nearby brush. Upon reaching the overgrowth, the aircrews discovered that they had been waved to safety by a platoon of Japanese soldiers! The Americans took cover with the Japanese for the remainder of the battle; once it was over, the aircrews were taken to the Nationalist leader in Paotang who hosted them for dinner that night, while their planes where guarded by the same Japanese they had been with earlier that day.[16]

Chairman Mao Zedong

AIR TRANSPORT ENABLED CHIANG TO EXPLOIT AIRLIFT'S GREATEST STRENGTH—THAT OF SPEED

The final airlift of Chinese troops to Beijing—called the "Baker Movement"—was accomplished by the 513th Troop Carrier Group in eleven days, carrying nearly 23,000 soldiers of the 94th Army from Shanghai to Beijing. The operation was again expedited by the fact that a significant portion of the 513th's aircrews were set to be replaced by incoming "green" crews once the airlift was accomplished. There was a tremendous amount of public pressure to bring all American troops home immediately after V-J Day, and a good number of parents, spouses, and sweethearts could not understand why so many Americans were still tied up in China in the months following the war. In fact, the 332d Troop Carrier Squadron, part of the 513th, would not rotate back to the U.S. until April 1947, performing airlift duties for Marshall's unsuccessful mission that sought to broker a peaceful resolution to what was becoming a full-blown civil war in China.[17]

From the beginning of September to the end of October, the four airlift movements—Cannon, Egg, Charlie, and Baker—airlifted more than 107,000 Nationalist troops from rural southwest China to critical urban centers in northern and eastern China. The first of these two waves—the movement of Nationalist troops to Nanjing and Shanghai—was the more significant. It served as the proverbial "finger in the dike," preventing a rapid Communist takeover of China's symbols of financial and political power. The second wave, the strategic seizure of the ancient capital of Beijing, was only slightly less significant. It established Chiang's northern-most position of power and would serve as a launching point for his excursions into Manchuria as the civil war unfolded.

These operations placed American policy-makers squarely in the center of the contest between Chiang and Mao. But the American decision to provide this strategic airlift was not so extraordinary, as the air transport crews had been shuffling Nationalist troops around China, Burma, and India since 1942. In fact, an American refusal to help Chiang with this strategic airlift would have been an abrupt change in US policy, one tantamount to betrayal by the Americans. The Allies had made the Generalissimo one of the "Big Four," placing him in league with Roosevelt, Churchill and Stalin—to fail to help him secure the Japanese surrender in September 1945 was simply unthinkable. But, as Wedemeyer observed, it was impossible to help the Nationalists against the Japanese without helping them against the Communists. The stated American position of neutrality in the Chinese Civil War was really untenable. These four airlifts violated that position even before the war formally ended and opened the door for additional aid to the GMD as time wore on. The Japanese war in China was about to bleed into a civil war, and the American influence in the subtle transition was crucial. The line between affecting the Japanese surrender and giving the Nationalists an advantage vis-à-vis the Communists was a fuzzy one indeed.

But the timely transport of Nationalist troops also shows us something else, something about modern war that reveals an oft-overlooked element of air warfare: the pivotal role of strategic airlift. Air transport is typically relegated to discussions of logistics, matters having to do with cumbersome tables, complicated charts, or dispassionate mathematical figures—but the merging of air power into this calculus adds a time dimension never before imagined. For example, during the Spanish Civil War, German air transport allowed Franco to move his troops from Morocco across the Straights of Gibraltar at just the critical time to turn that war in his favor.[18] In a like manner, air transport enabled Chiang to exploit airlift's greatest strength—that of speed—so as to rapidly turn the tables immediately in his favor following the Japanese surrender. The end of the Japanese "War of Resistance" flooded China's fragile road and railroad networks with ex-refugees eager to return home. Even without the congestion, Chinese

Curtiss C–46.

AIRLIFT "SWUNG THE BALANCE IN FAVOR OF THE NATIONALIST GOVERNMENT AND AVERTED AN IMMINENT COMMUNIST VICTORY"

armies traveled only by foot, as records show that there were only 6,000 trucks (the transportation complement afforded a single U.S. army) in *all* of China in 1944, half of these unusable for lack of parts. This meant that even Chiang's best troops could only move eight to ten miles a day, as in the case of the 93rd Army taking two months to cover 500 miles from Sichuan to Guanxi during the Japanese Ichigo Offensive of 1944.[19] With all this in view, Chiang was compensated for these logistical problems in spades by using American airpower—not in the form of air superiority fighters or strategic bombers, but in the form of timely strategic airlift, an airlift that allowed him to halt an otherwise Communist takeover of China's power-centers. In the words of well-known political scientist Tang Tsou, the airlift "swung the balance in favor of the Nationalist government and averted an imminent Communist victory" in China. And though the Nationalists would later be defeated and driven off the mainland to Taiwan, in September and October of 1945 this was far from being a foregone conclusion. As such, the Cannon, Egg, Charlie and Baker airlifts fundamentally altered the shape and execution of a vicious civil war that would endure for the next three years. ■

NOTES

1. I have chosen to use the *pinyin* system of Romanization for all Chinese names. In doing so, I use the name "Beijing" for "Peking" (or "Peiping"), "Nanjing" for "Nanking," and so forth. The only exception to this rule is my use of Chiang Kai-shek's Wade-Giles rendering as opposed to the *pinyin* "Jiang Jieshi," only as the former more popularly known than the latter. To alleviate confusion, I will parenthetically mention the name for a place the first time it is mentioned in the essay.

2. Charles S. Romanus and Riley Sunderland, *The United States Army in World War II, China-Burma-India Theater, Time Runs Out in CBI* (Washington DC: Office of the Chief of Military History, 1959), p. 390.

3. Odd Arne Westad, *Cold War & Revolution: Soviet-American Rivalry and the Origins of the Chinese Civil War* (New York, Columbia University Press, 1993), 93.

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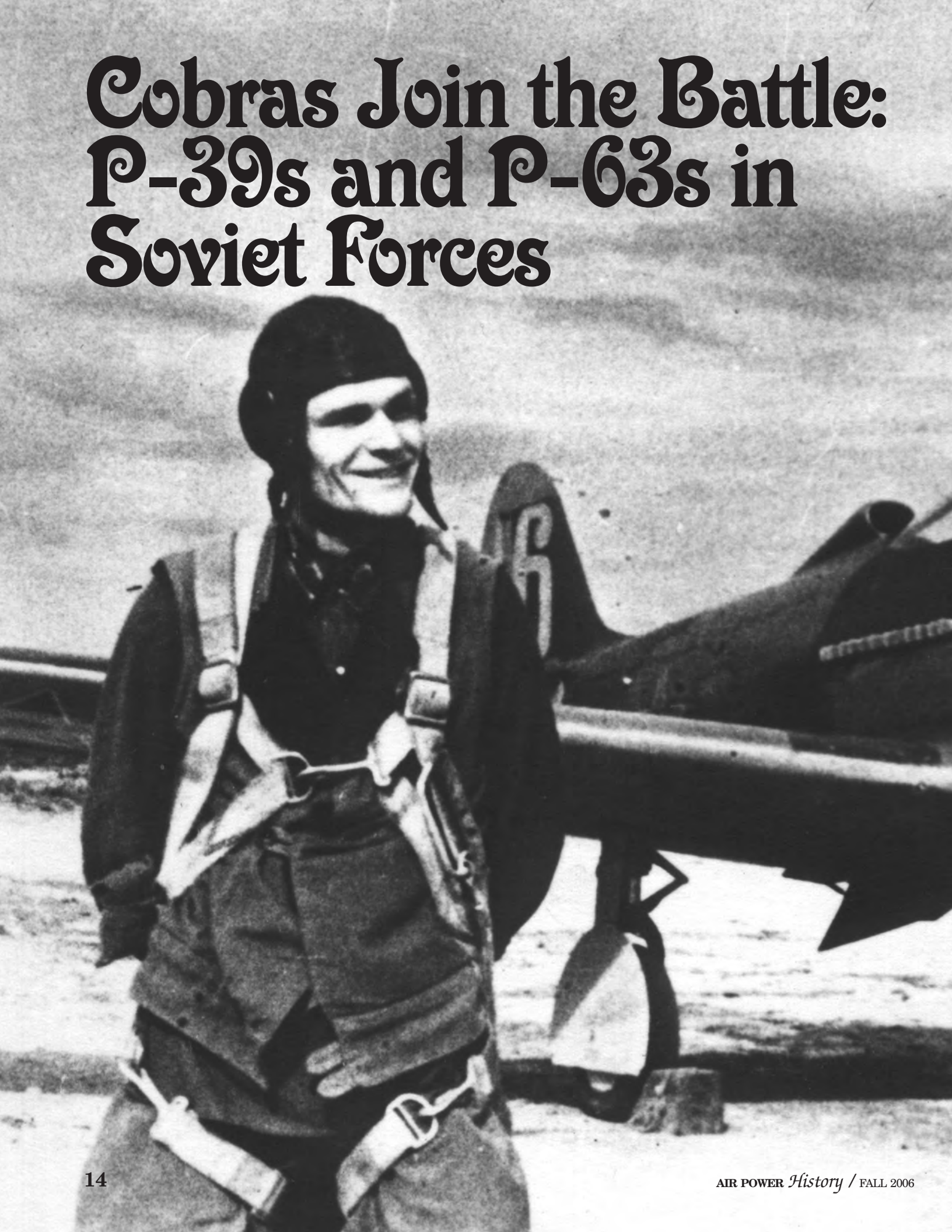
Cobras Join the Battle: P-39s and P-63s in Soviet Forces



Viktor P. Kulikov

(Overleaf) Pilot of the 19th Guard IAP, Kapitan I.V.Bochkov near Aircobra, I. Karelian front, summer 1942. Bochkov was a Hero of the Soviet Union, had 39 victories (7 personally+32 in group), and was killed April 4, 1943. *(All photos courtesy of the author.)*

(Below) P–39 Aircobra (tail number 42-4385) on a grass air field.

During World War II, the United States provided more Bell P–39 Aircobras to the Soviet Union through Lend-Lease, than any other aircraft. The P–39 became the most popular foreign plane imported because of the remarkable success enjoyed by Soviet airmen, notably by Aleksandr I. Pokryshkin and pilots of his division, who flew and fought on the eastern front.

The first P–39s to arrive in the Soviet Union, were the export variants, which the Americans began to turn out for England in August 1941. These were the Aircobra Is, fitted with 20-mm guns. Even as they tried to master the new American fighter, the Royal Air Force uncovered many defects and tried hard to improve them, but after a brief period of modifications, the RAF handed over eleven of its P–39s to the Soviets, shipping the planes via convoys to the USSR through northern ports.

THE FIRST P–39s TO ARRIVE IN THE SOVIET UNION, WERE THE EXPORT VARIANTS

In mid-January 1942, two Aircobras were delivered to the 22d Reserve Aviation regiment *ZAP* (*Zapasnoi Aviatsionnyi Polk/*). Subsequently, the 22d became the training center, where the fighter regiments were retraining for foreign the foreign planes. Soviet pilots and engineers were struck by the plane's unconventional configuration, including the engine placement in the center of the fuselage, the three-wheel undercarriage with a nose-wheel, and a mobile type instead of a shift canopy. The Soviets took extraordinary measures to master the plane. The Scientific-Test Institute of Air Forces (*Nauchno-Ispytatel'nyi Institut Voenno-Vozdushnylh Sil/* (*NII VVS*) sent a group of experts, headed by an engineer (I. G. Rabkin) and a test pilot (V. E. Golofastov). While English engineers and technicians, attached to the 22d *ZAP,* helped their Soviet allies as best they could, the severe Soviet weather made the airplanes' outdoor assembly—directly on a flying field—trying, to say the least.

When the first Aircobra was assembled, Golofastov began taxiing tests and only after practicing for some time in that manner, did he lift off into the air. Having gained some experience, Golofastov began to train the instructor-pilots of the 22d *ZAP.* Major Akulenko was the first instructor pilot to take off in the P–39.

In April and May 1942, after Soviet airmen ran official tests of the Aircobra, they concluded that the American fighter was the equal of Soviet and German planes of its class. Soviet experts regarded highly the P–39's maneuvrability, takeoff and landing characteristics, powerful weapons, and good equipment. Moreover, the plane was equipped with a heated cabin—no Soviet fighter enjoyed such luxury. The *NII VVS* test reports predicted that the Aircobra would prevail in air combat against all types of German planes and was also ideal for close air support. Simultaneously with the official tests, military pilots from the aviation regiments began

THE AMERICAN FIGHTER WAS THE EQUAL OF SOVIET AND GERMAN PLANES OF ITS CLASS

A Muscovite, Viktor P. Kulikov graduated from Urals University. For the past twenty years, he has been researching and writing the history of Russian aviation of the World War I period. Mr. Kulikov's articles, Sikorsky's Fighters, Aeroplanes of Lebedev's Factory, Soviet Ship-Based Reconnaissance, 1920s–1950, *and* British Aircraft in Russia *appeared in the Winter 2000, Winter 2001, Spring 2003 and Spring 2004 issues of this journal, respectively.*

Pilot of the 17th IAP, squadron commander, Kapitan A. I. Novikov near Aircobra I. November, 1942.

ON JUNE 15, [1942] SIX AIRCOBRAS ... INTERCEPTED SIX BOMBERS AND 16 FIGHTERS OF THE LUFTWAFFE. ... SOVIET PILOTS SHOT DOWN NINE ENEMY PLANES.

to prepare for their training flights on the Aircobra. Based in Ivanov City, the 22d ZAP became the training center for the fighting regiments. Major S. I. Mironov's 153d IAP was the first to arrive. Next, the 185th IAP, from the Leningrad front arrived for refresher training. However, the 19th Guard IAP from the Karelian front—whose members independently learned to fly the Cobra—were the first to fly the plane in combat.

On May 15th, pilots of the 1st squadron under Captain Kutakhov (later Marshal of Aviation) became the first to qualify on the Cobra. The training, including personnel and regimental staffers, was completed without incident. That day Soviet Cobras from Shongui airfield encountered German fighters, but neither side sustained any losses. On the next day in a dogfight with eight Messerschmitt Bf 109s, Senior Lieutenant I. D. Gaidenko's plane was damaged, forced to land, and the pilot seriously wounded. It was the first Aircobra lost on the Soviet-German front.

Later on, pilots of the 19th Guard IAP flew cover over Kirovskaya railway and Tulomskaya hydro-electric power station from Murmashi airfield, helped the ground troops of the Karelian front. The 20th Guard IAP, in the same division, received Aircobra fighters. Soviet pilots patrolled front-lines at Murmansk. For example, on June 15, six Aircobras from the 19th Guard IAP under the command of Captain I. V. Bochkov west to Murmansk intercepted six bombers and 16 fighters of the *Luftwaffe*. In the air fight, Soviet pilots shot down nine enemy planes.

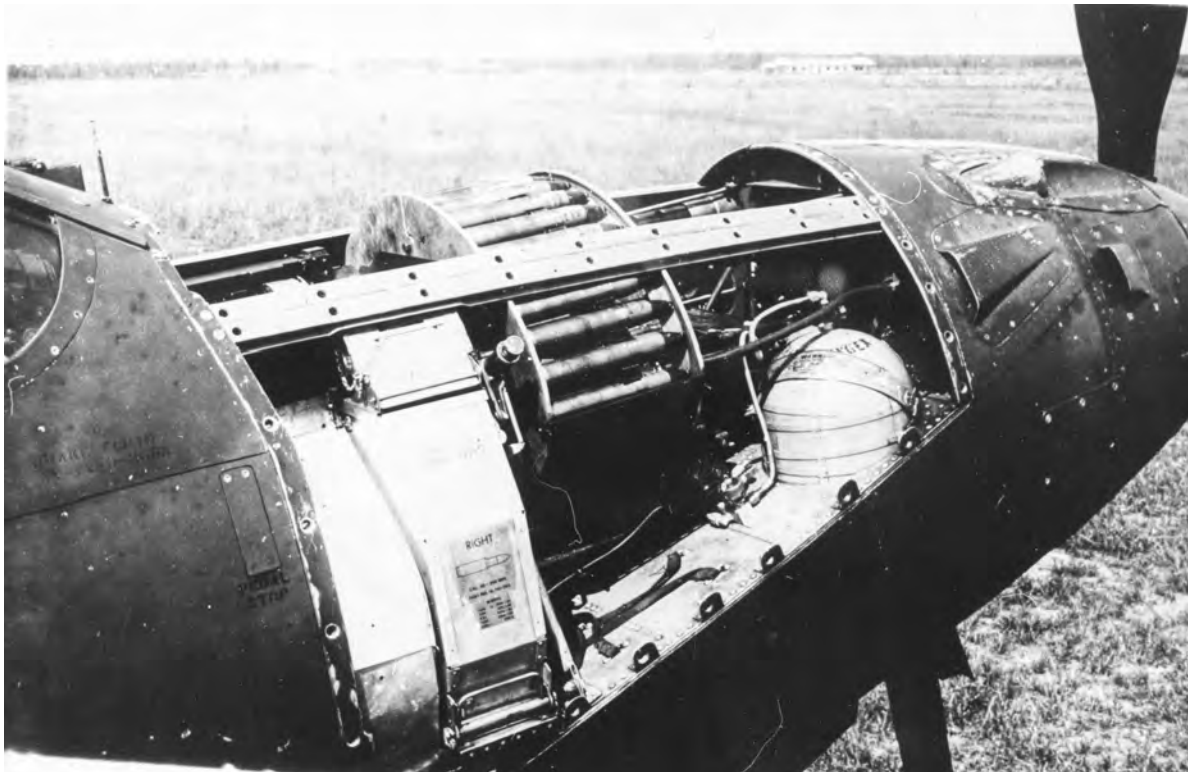
At the end of June, the 153d IAP arrived at the Voronezhskyi front in support of the 3d Shock Aviation Group. Since June 30 the regiment participated in battle operations on Aircobras. From Voronezh and Lipetsk airfields the regiment fought to the end of September. During the four months, pilots of the regiment flew 1,070 combat sorties, shot down 64 enemy planes (including 45 fighters), and lost 8 planes. The Commander of the 153d IAP Colonel Mironov attributed his unit's successes first of all to the skill of his pilots and second to the Aircobra's superior characteristics. In October, the 153d regiment was reinforced with new Aircobras and was transfered to the Northwest front. After more outstanding operations on November 22, the regiment was upgraded to the rank of Gvardeiskyi (Guard) and renamed the 28th Guard IAP.

In October, the 2d Guard SAP (Smeshannyi Aviatsionnyi Polk/Mixed Aviation Regiment) of the North Fleet naval aviation, received their first ten Aircobra I fighters. This unit's mission was to to defend the port of Murmansk. On April 14 1943, while repulsing a German air raid on Murmansk, the 2d Guard numbering ten Aircobra and six Hurricane fighters engaged an enemy force of 14 German fighters. In the ensuing battle, five German and one Soviet fighter were shot down.

The mass appearance of Aircobra fighters on the East front took place already in 1943. By that time the deliveries of the new P–39 were carried out, from the north through Arkhangelsk and Murmansk, from the south through Iran, and from the east through Alaska. Aircobra fighters were distributed to the new aviation units, out of which the whole divisions and corps were formed.

Beginning in November 1942, the United States began to deliver the P–39D model. The D, built for American forces, was transported to the Soviet Union via Iran. The D model differed from the Aircobra I mainly with respect to modified equipment. The series D-2 had also an auxiliary

Weapon bay of Aircobra. Cannon cylinder is clearly visible.



THE 100TH INCLUDED … BROTHERS BORIS AND DMITRII GLINKA, 31 AND 50 VICTORIES, RESPECTIVELY; IVAN BABÀK (33 VICTORIES) ALSO FLEW IN THAT [GUARD] REGIMENT

fuel tank under the fuselage, the V-1710-63 engine, capable of generating up to 1,325 h.p. on afterburner, also carried a 37-mm cannon.

Beginning in 1943, the P–39 series K, M, N, and Q were shipped to the USSR along the Alaska-Siberia (ALSIB) route. According to the Soviet data, the U.S. sent 2,593 P–39s through the Siberian city of Krasnoyarsk. The greatest number of planes were the P–39N, featuring the V-1710-85 engine and the P–39Q with more powerful armaments—37 mm cannon and six 12.7 mm machine-guns.

Aircobras appeared on all of the Soviet fronts from the North to South. By July 1943, there were seven times as many Aircobras in action on the Soviet front than there had been November 1942. The 258th SAD/mixed aviation division (renamed in August the 1st Guard Aviation Division) was equipped with P–39 and P–40 fighters and continued to fight on the Karelian front. In the Leningrad region, P–39Q were sent to the 102d and 103d Guard IAPs of PVO (Protivo-Vozdushnaya Oborona/ anti-aircraft defence). On the North-West front three regiments of the 5th Guard Aviation Division, under Colonel G. A. Ivanov, flew on Aircobras, and so did all of the regiments of the 1st Guard Aviation Division of Colonel V. V. Sukhoryabov on the Central front. Many P–39 were concentrated on the south sector of the Soviet front. The planes arrived here directly from Iran.

The 25th and the 11th *ZAP*s (reserve aviation regiments) were busy with pilot retraining. The 298th IAP, which received the P–39D and P–39K models, joined in air combat on Kuban from the middle of March 1943. By August its pilots had shot down 167 enemy planes, while losing 30 Aircobras. In recognition for its service, the regiment was upgraded in rank and renamed the 104th Guard IAP.

The 16th, 100th and 104th Guard IAPs belonged to the 216 IAD (later the 9th Guard IAD). The 16th Guard *IAP* (commanded by A. I. Pokryshkin) after retraining received new P–39D, K and L models from Teheran. In April 1943, the unit arrived in Krasnodar and almost at once joined heavy air fighting on Kuban. They fought through the end of the war later flying the P–39N and P–39Q, and at war's end was in Prague. Among the pilots of the 16th Guard were: three-time Hero of the Soviet Union Polkovnik Aleksandr Ivanovich Pokryshkin, with 59 victories; two pilots double Heroes of the Soviet Union: Major Grigorii A. Rechkalov, 56 victories, and Captain Aleksandr F. Klubov, 31 victories; and more than 15 other Heroes of the Soviet Union.

The third regiment of the same famous division was the 45th IAP (later the 100th Guard IAP) under the command of Polkovnik Ibragim Dzusov, who flew Aircobra and Kittyhawk fighters since February 1943. The 100th included such aces as brothers Boris and Dmitrii Glinka, 31 and 50 victories, respectively; Ivan Babàk (33 victories) also flew in that regiment.

The number of Aircobras in the naval aviation also increased. By December 1943, the 2d Guard IAP and the 255th IAP of the North Fleet had about 30 P–39s. On the Black Sea Fleet, the 11th IAP received Aircobras in March 1943. The fighters protected Gelendzhik, where part of the Black Sea Fleet was stationed. Later they supported the ground forces along the front line, escorted bombers and torpedo-boats, and took off on "free hunts" (targets of opportunity) over the enemy territory. During the second half of 1943, the 11th IAP

P–39Q (tail number 42-20561) with ventral tank at the tests in the NII VVS.

carried out 75 air combats, shot down 92 German planes (60 fighters and 32 bombers and reconnaissance), while losing 10 of their P–39. By the end of 1943 the 43d *IAP* of the Black Sea Fleet also had received some P–39s. The pilots of that regiment supported the advancing units of the Soviet Army and covered Pe–2 and A–20 Boston bombers in air raids on Constanza, Rumania. In November 1944, when battle action on the Black Sea had finished, there were 129 Aircobra fighters of different modifications in the naval aviation arsenal. The North Fleet used the Aircobra fighters as multipurpose planes. They took off to cover the ships and coastal objects, to support bombers and attack planes, and to attack enemy airfields.

SOVIET PILOTS WERE UNANIMOUS IN THEIR HIGH REGARD FOR THE AIRCOBRA'S POWERFUL ARMAMENT

Beginning in 1944, the inventory of Aircobras in the PVO system increased sharply. In late 1943, the PVO numbered only 65 Aircobras, while at the beginning of 1945, there were 597 P–39s. In 1944 the 57th, the 66th and the 101st Guard IAPs participated in covering American air bases in the Ukraine. American B–17 Flying Fortress bombers used Poltava and Mirgorod airfields during their shuttle bombing raids between Italy, England, and the Soviet Union. It is interesting to note that the regiments located closer to front, were armed with Aircoras, while the rear echelons flew the Hurricane and Kittyhawk fighters. By the end of the war there were 8 regiments in the PVO system, armed with P–39s. In total they shot down 95 enemy planes.

While considered a marginal plane in the U.S. and England, the Aircobra was highly esteemed by the Soviet pilots. A. I. Pokryshkin called it a perfect, modern, and high-speed fighter. V. D. Lavrinenkov noted that Aircobras were the modern battle machine, made at the level of the best fighters of the war; E. Ya. Savitskii underlined that it conceded something to the Yak–1, but on the whole the P–39 was excellent. According to the official report of the 153d IAP, Luftwaffe pilots considered Aircobra fighters the most dangerous opponents and engaged them in battle only when they had advantages in numerical superiority, in height, and suddenness. Air combat conditions on the Soviet-German front generally saw air combat take place at an altitude of from 4,000-5,000 meters, where most air battles were fought. At these heights the Aircobra had the best flying properties in comparison with German and Soviet fighters of that time. In flight range, the Aircobra equalled Soviet fighters and with drop fuel tanks surpassed them.

Soviet pilots were unanimous in their high regard for the Aircobra's powerful armament. Even the Aircobra I, equipped only with one 20-mm cannon and 6 machine guns (including two of large-caliber) surpassed many Soviet fighters. The late modifications, for example P–39Q with 37 mm cannon and 4 Browning machine guns of 12.7 mm caliber, had the so-called shattering weapon. The Aircobra, on which Soviet ace Pokryshkin flew, had a control knob with combined firing buttons for cannon and machine guns. In the USSR, the armaments of the P–39Q modification were considered excessive and two underwing machine guns were often removed. The 37-mm cannon, as a rule, could destroy an enemy plane on one hit. That gun was used to hit armored cars, steam locomotives, river and sea vessels. From the second half of 1943 on, the P–39 was used less as a fighter and more often as an attack plane for raids on land and sea targets. During February 1944, the pilots of the 9th Guard IAP destroyed 13 planes, 110 motor vehicles, 100 horses, 5 steam locomotives and a lot of enemy

Pilots of the 30th Guard IAP on airfield Gensya-Vulka (Poland), the 1st Belorussian front, 1944. The Hero of the Soviet Union Major M. P. Rents (the third from the left in the first row) had 23 victories (18 personally and 5 in group). His Aircobra had board number "93".

THE PLANE'S MAJOR DEFECT CONCERNED THE ENGINE, WHICH WAS POSITIONED IN THE AIRCOBRA'S CENTER OF GRAVITY

infantry. From January 1 till May 10 1943, the 216th shot down 187 planes from the air and destroyed 200 on the ground. Soviet pilots were especially successful when flying Aircobra fighters during "free hunt" on railroads. The P–39's powerful gun pierced locomotive boilers with armour-piercing protectiles. In one combat sortie in September 1943, 12 pilots from the 19th Guard IAD destroyed 13 steam locomotives.

Other weapons for the attack plane variant of the Aircobra included bombs, usually demolition and incendiary bombs in the 100-250 kg range. Bombing was performed from horizontal flight, flat dive (under 45 degrees) and on the sea, at low altitude.

P–39s were used also for battlefront reconnaissance. The plane was equipped with a vertical aerial camera AFA-I. Such reconnaissance missions were carried out by the 118th ORAP (Otdelnyi-Razvedyvatel'nyi Aviatsionnyi Polk, separate reconnaissance aviation regiment), in the 67th and 98th Guard IAPs.

At low and medium altitude, the Aircobra had insufficient speed and maneuverability. But the plane's major defect concerned the engine, which was positioned in the Aircobra's center of gravity. Whenever the pilot fired the gun and the shells were expended, it affected the plane's alignment sharply, often causing the fighter to go into a spin. The spin produced a considerable load and vibration on the controls and any delay in recovering from a spin could be fatal.

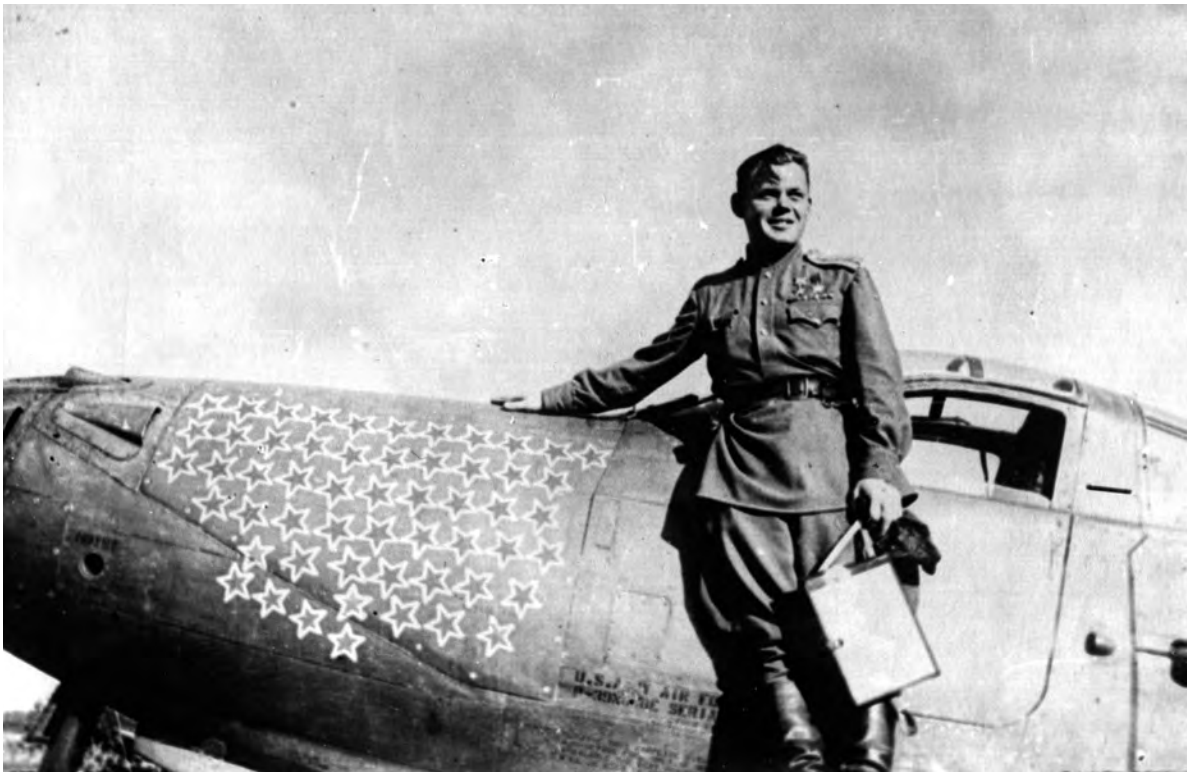
The spin produced numerous failures and crashes in combat units. During two months in 1944, spins caused two accidents and four failures in the 1st Guard IAD. No one was immune, even skilled pilots found it difficult to recover from a spin. The NII VVS had three accidents: on February 2, 1943, K. A. Gruzdev was lost in an Aircobra; on January 3, 1944, K. A. Avtonomov (flying a P–39N) went down; and on April 27, 1944, K. I. Ovchinnikov crashed (in a P–39Q-10). The situation deteriorated to the point that in the Fall of 1943 Bell Aircraft dispatched a special team to Moscow.

Another problem encountered on the Aircobra was the difficulty in exiting the plane once it entered a spin. Pilots jumped out of the left door, which in an emergency was thrown off, but often struck the P–39's tail, again with fatal results. Two Heroes of the Soviet Union—N. M. Iskrin in May 1943, and B. B. Glinka in July 1944—crashed in this way. Sometimes, even if the pilot was lucky and managed to get out of the spin, he could encounter a new danger. The heavy overloads deformed the P–39's tail unit and tail, jamming the plane's elevator and rudder.

The Soviets acted to contain the problems by implementing an extensive safety program. Flight tests demonstrated specific pilot actions that caused spins. The NII VVS held meetings and practices where skilled pilots demonstrated safe methods of piloting the American fighter. An educational film was made about the problem and distributed for screening at combat units. These efforts helped reduce the accident rate at the front, although it was impossible to eliminate losses completely.

Also, the chief engineer of the Soviet Air Forces ordered several modifications made and imposed restrictions. For example, aerobatic flying without ammunition was categorically forbidden. Engineers replaced the armored oil tank to improve the fighter's forward the alignment and reinforced the tail. As a result of the modernization—which

Pilot of the 16th Guard IAP, twice Hero of the Soviet Union, Major G. A. Rechkalov near his Aircobra at the 1st Ukrainian front, August 1944. He had 62 victories (56 personally and 6 in group).



THE P–39'S COMBAT RECORD WAS: ONE AIRCOBRA LOSS PER 122 COMBAT SORTIES AND 4 ENEMY PLANES DESTROYED

affected 326 planes—the P–39 successfully passed the NII VVS tests.

Another problem concerned the P–39's Allison V-1710 engine.The engine's expected operational life of 250 hours fell short under battle conditions, where it lasted only between 60 and 70 percent of the flying hours predicted. The degraded performance was attributed to excessive afterburning that overheated the engine oil and fused and jammed bearings. Connecting rods came off and pushed the engine out of action. The use of poor quality oil and gasoline also reduced the engine life. Because of shortage of the American spare engines at least 100 P–39s were refitted with the Soviet M-105P engine.

In the winter, oil lines and cooling systems were heated. With the beginning of cold weather, the planes' lubricants were partially replaced with more cold-resistant Soviet products. The rupture of fuel system pipes caused fires in the air. Thus, while ferrying not far from Gudermes, the Hero of the Soviet Union N. E .Lavitskii was lost. In that connection American duraluminum pipes were replaced with specially processed copper from Soviet stocks.

The North and Baltic Fleet tried to outfit the P–39 on a ski undercarriage. However, that innovation did not gain much acceptance and Aircobras continued to fly on wheels the year round.

To speed up training, the Soviets built a two-seat trainer, with the second cabin ahead of the main. That plane resembled the American P–39. Pilots complained that the front cabin was close and uncomfortable. The propeller rotated 40 cm before the pilot's eyes and, in case of emergency, a pilot would inevitably get under the rotating propeller.

In 1944, Bell Aircraft stopped production of the P–39. The last five P–39Q passed along the Siberian *ALSIB* air route early in 1945. The totals produced vary according to different sources. The U.S. delivered to the USSR between 4,719 and 4,746 Aircobra fighters of all models. England re-exported 212 to the USSR, but of those only 158 P–39 arrived at Soviet northern ports. On the whole, in accord with Soviet sources, the USSR accepted 4,952 Aircobras. The following models of Aircobras were sent from the USA: 108 P–39D, 40 P–39K, 137 P–39L, 157 P–39M, 1113 P–39N, 3291 P–39Q.

Many regiments and divisions of the Soviet Air Forces flew Aircobras until the end of the war. Soviet pilot G. G. Golubev flying combat in Czechoslovakia early in May 1945, shot down one of the last enemy aircraft (a Dornier Do 217) in the European theater of operations. By war's end, Soviet Air Forces and aviation of PVO (anti-aircraft defence) had an inventory of 3,078 Aircobra fighters, including 700 planes in the PVO system. At the same time, Soviet naval aviation had 691 Aircobras. Aircobras appeared in the Pacific Ocean Fleet in July 1945, when the Soviet Union was preparing for war against Japan. The 27th IAP from the North Fleet and the 43d IAP from the Black Sea Fleet were transfered on the Far East. Both regiments had approximately 100 Aircobras.

According to the Soviet data, by the end of the war the P–39's combat record was: one Aircobra loss per 122 combat sorties and 4 enemy planes destroyed. Many pilots were credited with destroying 20 enemy planes. Major Grigorii Andreevich Rechkalov, an Aircobra pilot of the 16th Guard IAP, shot down 50 German planes and is designated a "champion."

Pilots of the 298th IAP greet Vasilyi M. Drygin, who returned from combat flight. North Caucasus front, 1943.

THE P–63 KINGCOBRA WAS A FURTHER DEVELOPMENT OF THE AIRCOBRA

Aircobras remained in the Soviet aviation arsenal until 1950 and could be found in flying schools until about 1955. On the whole, the Aircobra was a good, reliable combat plane that left a significant mark in the memory of Soviet pilots.

Bell P–63 Kingcobra

The P–63 Kingcobra was a further development of the Aircobra. It had the same general arrangement as its predecessor. The Bell Aircraft designers somewhat increased its dimensions, and changed the tail unit and wing. Out of 3,303 Kingcobra fighters constructed from 1943 to 1945, 2,400 went to the Soviet Union.

In December 1943, the Bell company sent detailed information about the new fighter to Moscow. In February 1944, representatives of NII VVS, engineer-pilots A. G. Kochetkov and F. P. Suprun, were sent to the U.S. to carry out all-round

Test pilot A. G. Kochetkov in cockpit of P–63A, in the United States, 1944.

Preparing to fly P–63 Kingcobra (tail number 42-69239) in Fairbanks, Alaska.

tests of the plane before its mass delivery to the Soviet Union.

Having crashed one Kingcobra during the spin-tests, Kochetkov managed to convince the Americans of the necessity to modify the airframe. The shipment of P–63s was planned to begin in the first half of 1944. Early that summer American ferry-pilots delivered the first Kingcobras to Fairbanks and began to train Soviet pilots on them. In Alaska only the squadron commanders of the ferrying aviation division were trained. All other pilots would master the new plane directly in their regiments at the front. The P–63 ferrying went along the Siberian *ALSIB* air route. The first plane was handed over in June 1944. Beginning in September 1944, while still in the American aircraft factory, the P–63A began to be painted with the symbol of the Soviet Air Forces—red stars with white edging.

THE INITIAL KINGCOBRAS WENT TO UNITS THAT HAD BEEN ARMED WITH AIRCOBRAS

The new fighter did not arrive at the front immediately since there was no Soviet aviation shortage at that time. This permitted careful flight testing of the P–63. From the end of 1944 until March 1945, the planes of the series A-1, A-5, A-7 and A-10 were consecutively tested in NII VVS and LII NKAP (Letno Ispytael'nyi Institut Narodnogo Kommissariata Aviatsionnoi Promyshlennosti/ Flying-Test Institute of People's Commissariat of Aviation Industry). On the whole, the P–63 performed well. Among its positive attributes were: high speed, good maneuverability, powerful weapons, and safe controls.

The P–63A was at a speed disadvantage to the Messerschmitt Me 109G-4 (9 km/h at a height 5,000 meters) and in rate-of-climb (2 m/sec) at the same height. But in horizontal maneuver the American fighter outstripped both the Me 109G-4 and Focke-Wulf FW 190A-4.

Testing revealed other lacks compared with P–39s: the P–63's useful loading and fuel capacity were lower and its defensive armor was not as good. Also, wing covering deformation appeared on the A-1, A-5 and A-6 series aircraft. Consequently, Bell increased the thickness of the covering and strengthened the wings from the A-7 series on. The aerodynamic instability also emerged while pulling-out and during aerobatics. The latter problem was addressed on the P–63N with the installation of a more powerful engine, the V-1710-117, and a ventral fin. Despite all of the designers' efforts, both the Kingcobra and Aircobra suffered from spins. When the cannon and fuselage machine guns ammunition were spent, the trim of the planes was disturbed, requiring immediate correction by trimming the tabs. Otherwise, the P–63 went into a spin. Therefore, Soviet pilots flying the Kingcobra were forbidden to execute a sharp pull-out and input in vertical figures.

Beginning in the spring of 1945, the P–63 began to arrive at frontline PVO aviation units. The P–63 was best suited for search and interception missions. At altitudes above 7,500 meters, the Kingcobra overtook English Spitfire Mk. IX and Soviet Lavochkin La-7. It had good ceiling of 13,105 meters. The standard equipment of all P–63 was radio semi-compass MN-26Y, that essentially facilitated navigation at night and in clouds. Early in 1945 one P–63-A-10 arrived, equipped with radar. The radar was intended to prevent attacks from behind. By May 1, 1945 51 PVO regiments were equipped with P–63s.

The initial Kingcobras went to units that had been armed with Aircobras. The first to receive P–63s was the 28th IAP of PVO, based near

P–63C-5 BE (tail number 43-11133) during ferryng along ALSIB air route.

SOVIET MISSION IN ALASKA STOPPED IMMEDIATELY AFTER JAPAN'S CAPITULATION

Moscow. By August 1945, P–63s arrived at the 17th and the 821st IAPs, ten planes in each. In autumn several Kingcobras came to the 39th IAP. All these regiments entered PVO of the Moscow region.

The P–63 began to be delivered in to Soviet Air Forces in the summer of 1945. As preparations were made for the war with Japan, the new fighters were sent to aviation units of the 12th Air Army in the Far East. The 190th aviation division under the command of Major General Fokin was the first to receive P–63A. The division was transfered to Trans-Baikal in June 1945 and by August 2 finished retraining on the new American fighter. During air operations in Manchuria it flew from two airfields—"Ural" and "Leningrad"—located not far from Choibolsan in Mongolia.

The 245th IAD, which included the 940th and the 781st IAP regiments also flew P–63s. In July and August Kingcobras arrived at the 128th SAD (mixed aviation division), based on Kamchatka peninsula. At the beginning of air operations 97 P–63s arrived at the 9th and the 10th Air Armies.

During the brief military campaign against Japan, Kingcobras were used to provide air cover from air ground troops and ships, to attack and bomb, provide escort, and conduct reconnaissance. For example, on the second day of the offensive 40 Il-4 bombers, escorted by 50 P–63s bombed the fortifications at Suchzhou. Pilots of the 190th and the 245th IADs working as attack planes and light bombers supported the advancing Soviet and Mongolian troops. They also covered transport planes, delivering fuel to the advanced tank and mechanized units. The P–63s carried two Soviet FAB-100 bombs externally. Underwing large-caliber machine guns were not usually mounted. The 888th and the 410th IAPs from the Kamchatka peninsula inflicted considerable damage to Japanese bases on the Kuril Islands, and then covered the landing of Soviet troops on them.

The Japanese aircraft did not offer serious resistance to the advancing Soviet armies, therefore it was impossible to assess the Kingcobra's performance in air fights. One unique air combat in a P–63 was flown by Junior Lieutenant I. F. Mirîshnichenko of the 17th IAP. On August 17 he and V. F. Sirotin (a Hero of the Soviet Union) attacked two Japanese fighters, who were attacking transport planes coming in for a landing not far from the ship Vanemyao. One Japanese pilot was shot down, another managed to disappear on low-level flight among nearby hills. Miroshnichenko probably shot down the Japanese Ki–43 Hayabusa fighters.

Concurrently, the first P–63s arrived at the 7th IAD naval aviation unit of the Pacific Ocean Fleet. At the beginning of the war with Japan, the division had only 10 Kingcobras. Anether twenty arrived during the battle actions. However, they didn't participate in combat operations.

The lease of the American fighters to the Soviet mission in Alaska stopped immediately after Japan's capitulation. The last Kingcobra was delivered to Kamchatka peninsula on September 29, 1945. The Soviet Union managed to receive 2,400 P–63 of the total 2,450 ordered. After the war the most advanced lend-lease fighter occupied a firm position in Soviet aviation. Kingcobras were sent not only to aviation units in the USSR, but also to Soviet occupation armies in Germany (the 1st Guard IAD in Neuhausen), Austria, China (the 83d IAK in Port-Artur).

The exact number of P–63s in Soviet naval aviation is not known, but there were many of them.

P–63A-10 of a certain IAP after the war.

Kingcobras came in aviation regiments of the North and Black Sea Fleets, earlier armed with P–39 Aircobra. Pilots of the 314th and the 246th IAPs flew on these planes in the Baltic Fleet.

Soviet pilots liked the P–63 for its ease of operation, and spacious, heated cabin with a perfect view, good devices and a shooting sight. However, after 1948 the problem of engine wear appeared. It was forbidden to fly the planes at extreme speeds. This edict was enforced by locking the throtle limiter quadrant. Kingcobras remained in action right up to the introduction of jet fighters. Their replacement began in 1950. In the end they played the important role in training pilots on jet engineering fighters MiG–9, and then *MiG–15*. Like the P–63, the jet fighters had a similar undercarriage with a nose-wheel. All Soviet fighters had an undercarriage of the old circuit with tailwheel. Here and there the task was sometimes complicated. For example, the landing approach was mastered without releasing the landing flaps at speeds of 400-500 km/h, imitating the MiG–15. When P–63s were removed from the inventory of combat units, they still remained in flying schools, as transitional plane.

Three times Hero of the Soviet Union, Commander of the 9th Guard aviation division, Polkovnik Aleksandr Pokryshkin. He had 65 victories (59 personallyand 6 in group). He later became Marshal of Aviation.

The two-seat trainer variants of P–63 were produced in the USSR. Their first variants were made by hand air workshops and repair bases. The standard project of alteration was offered by TsNEB VVS (Tsentral'naya Nauchno-Experimentalnaya Baza Voenno-Vozdushnykh Sil/ Central Scientific-Experimental Base of Air Forces). The second cabin was placed instead of weapon bay. One machine gun was preserved to perform exercises in aerial gunnery. One two-seat P–63, altered by the 321st repair base, since December 1948 till April 1949 passed tests in NII VVS. V. E. Golofastov flew on it. The changes in alignment improved anti-spin characteristics of the plane. Program of tests included also parachute jumps to prove the safety of leaving the faulty plane. The jumps were fulfiled by the well-known parachutist V. G. Romanyuk. After that began a mass alteration of fighters into an educational variant on repair bases of air armies and fleet began. At present only one plane has been preserved in Russia. This strange hybrid of a P–39 and P–63 assembled from fragments of several planes that crashed on the Siberian air route *ALSIB,* is displayed in the Air Forces museum in Monino. ■

A Hot Day in a Cold War: An RB-47 vs. MiG-17s, April 28, 1965

Forrest L. Marion

(Overleaf) An RB–47 in flight.

Early in the Cold War, in 1946, the United States had begun conducting military reconnaissance flights near the borders of the Soviet Union and its satellites. These missions, known as "PARPRO"—for Peacetime Airborne Reconnaissance Program—were intended to obtain information on Soviet strategic military capabilities as well as to prevent the possibility of a surprise attack on the U.S. or its Western allies. Unlike the overflights of denied territory that U.S. aircraft conducted in later years, PARPRO sorties were entirely legal as they were not intended to penetrate Soviet or other potential belligerents' airspace. Whereas the overflights required Presidential approval, U.S. military theater commanders approved the more common PARPRO missions.

In 1960, the shoot-down of Francis Gary Powers led the Eisenhower Administration to suspend the practice of penetrating Soviet or other potential belligerents' airspace. But PARPRO missions continued as they had since the 1940s. Regardless of intent, however, many PARPRO aircraft were attacked: some were downed; others, like the RB–47 in the following account, survived. Most PARPRO routes were used repeatedly and were known in the Strategic Air Command (SAC) as "library routes," a practice that tacitly communicated to potential belligerents that the mission was not of hostile intent.[1]

PARPRO SORTIES … WERE NOT INTENDED TO PENETRATE SOVIET OR OTHER POTENTIAL BELLIGERENTS' AIRSPACE.

On April 28, 1965, the RB–47 crew designated "E-96" of the 343rd Strategic Squadron, 55th SRW, serving on temporary duty at Yokota Air Base (AB), Japan, was conducting a typical PARPRO mission over the Sea of Japan. The RB–47H, called the "Silver King" aircraft, was a modified B–47 bomber. The Silver King modification included an integrated capsule to the aircraft bomb bay that provided crew stations for the three Electronic Warfare Officers (EWO), affectionately known as "Ravens" or "Crows." Electronic receivers and direction finding equipment and associated antennae were added, along with signal analysis and recording equipment to receive, locate, and analyze the emissions of potential adversaries' early warning and surface-to-air-missile and anti-aircraft-artillery acquisition and tracking radars.[2]

The six-man crew on that day, led by aircraft commander Lt. Col. Hobart D. "Matt" Mattison, had departed from Yokota on a scheduled 7-1/2-hour sortie. After takeoff and prior to entering what was known as the "Sensitive Area," the copilot, Lt. Henry E. "Hank" Dubuy, Jr., switched the RB–47's two rearward-firing 20-millimeter guns from the standby position and fired a few bursts to ensure they were operational. Satisfied, he placed them back into the standby position. The "Sensitive Area" was normally defined as that point along the route where the aircraft could be initially located and tracked by potentially hostile radar systems. About six hours into the flight, Mattison's crew began a leg that took them north-northwest toward Wonsan Harbor, North Korea. Their aircraft was then about 80 miles off the coast, clearly in international airspace, and had just started to turn back toward Yokota. Suddenly, the crew received a high-frequency radio transmission from an American monitoring station somewhere in Japan or South Korea that warned of "bogies"—unidentified aircraft—in the area. At about the same time, Capt. Robert C. "Red" Winters, one of the three EWOs and designated as "Raven-1" on the crew, detected an airborne intercept radar signal that he guessed was coming from behind the RB–47. Although some accounts were unclear on this point, the copilot-gunner, Hank Dubuy, recalled that he observed a flight of two fighters in addition to a flight of two other aircraft at a higher altitude and farther away. Upon receiving the radar warning, he looked over his right shoulder, observed the two approaching fighters, and reported, "Bogies closing fast." Quickly, Dubuy rotated his copilot seat to the rear, took out the hand-held camera that was standard equipment, and sought to identify the approaching fighters. "Raven-2" was George V. Back, also a lieutenant at the time. Retired since 1981 as an Air Force major, he later recalled, "No matter how much preparation I had, how much intelligence on the bad guys I knew, I never thought that some North Korean would try to kill me on my first operational temporary duty. But the North Koreans were deemed unpredictable and their actions frequently irrational. After that mission, I knew this for a fact."[3]

Suddenly, the RB–47 shuddered violently from the impact of 23-millimeter rounds fired by the lead North Korean Air Force MiG–17. There had been no warning shot or radio call of any kind. "Raven-2," George Back, "felt the aircraft shudder, pitch nose down, and begin losing altitude." Moments later, Lieutenant Colonel Mattison announced to his crew, "They are shooting at us. We are hit. I'm going down!" Fortunately, what Mattison meant was not that the aircraft was "really going down"—as at least Lieutenant Back thought momentarily—but that he was descending to a lower altitude and taking evasive action. At about the same time, Mattison called for the navigator to give him a heading. Capt. Robert J. "Bob"

An earlier version of this paper was presented at the meeting of the Conference of Historic Aviation Writers (CHAW) held in Herndon, Virginia, on October 22, 2005. Retired U.S. Air Force Lt. Col. Joel J. Lutkenhouse, one of the RB-47 crew members involved in the incident in 1965, attended the presentation.

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THE PAIR OF MIG–17s HAD ATTACKED IN SEQUENCE FROM BEHIND AND BELOW THE RB–47

Rogers, the radar navigator, replied crisply, "Take a 180 and I'll refine it in a second."[4]

E-96 was youthful compared with other RB–47 crews in the 55th wing. Three of the six crew members, copilot Dubuy and Ravens George Back and Joel J. Lutkenhouse, were all "new guys." Although first lieutenants by April 1965, all three had entered the wing as second lieutenants a year earlier. Many years later, George Back wrote that the experience and professionalism of their aircraft commander, Mattison, as well as the Raven-1, Winters, and the radar navigator, Rogers, was probably the reason "why Hank, Joel, and I were put on the crew. Normally, three new crew members would not be put on the same crew." In fact, Back and Lutkenhouse had graduated from the same Undergraduate Navigator Training class at Harlingen AFB, Texas, and served together at Lockbourne AFB, Ohio, prior to reporting to the 55th wing in 1964. On April 28, 1965, Lieutenant Colonel Mattison's crew was about to exhibit the flight discipline and crew coordination worthy of its nickname, "Mattison's Drill Team." As a young pilot twenty years earlier, Hobart Mattison had flown B–17s during World War II. He had been shot down over France and returned to Allied lines by the French Underground. Years later, George Back wrote:

'Matt' was no-nonsense when it came to flying and demanded the highest standards of professionalism. . . . Before every mission, we lined up under the wing for inspection with our parachutes on the ground in front of us, our helmets on top of the 'chutes.' Matt would conduct a pre-mission crew brief to make sure we all were aware of any particular operations which pertained to that specific mission. We would do a 'left face,' march forward till clear of the parachutes and begin our individual pre-flights. When talking on the interphone, we addressed each other by aircraft position, said what needed to be said and then shut up. First names [and] jokes were for outside the aircraft, the 'O club,' or 'Mama Kay's' restaurant. . . . I . . . firmly believe that I am here today only due to the grace of God, crew integrity, and the ability of Matt to fly and plant firmly on the runway at Yokota an otherwise unflyable pile of smoking aluminum scrap.[5]

The pair of MiG–17s had attacked in sequence from behind and below the RB–47, from which position they had expected to remain hidden from the Americans. Furthermore, they were too close for the RB's fire control radar to lock-on. From that position, they attacked at a high angle, nearly stalling their jets, before breaking off each pass and falling off on one wing to regain airspeed. The several accounts varied, but Dubuy and Back recalled the MiGs made a total of three firing passes. Each resulted in damage to the RB. On the first pass, the lead MiG produced most of the damage, hitting at least the engines and tail gun section. In the midst of a stream of chaff that Captain Winters was dumping by then, the MiG's wingman made the second pass and also hit the RB–47, possibly in the fuel tank area [this damage may have been sustained on the third pass], starting a fire but, fortunately, not producing an explosion. The lead MiG returned for another pass and added to the damage, but must have been hit in the process. Although one of the RB's two tail guns had been taken out of action on the first pass, the other gun was still operational. Receiving Mattison's permission to fire, Dubuy managed to fire roughly 300 rounds—in manual mode and without the benefit of tracers—and scored hits on the lead MiG during its second pass. The lieutenant observed the MiG to "pull up his nose slightly over the horizon, then proceed into a steep dive." Moments later, the wingman broke off his second pass without firing and departed. The copilot watched the stricken MiG disappear straight down into a cloud deck between 12,000 and 10,000 feet above the water. Unfortunately, if the MiG was, in fact, shot down it has never been confirmed officially. But at the time, crew E-96 was fighting for its own survival. The

A painting of the attack done by Maj. George V. Back, USAF Ret., in 1996. The original is in color. (*Photo of the art used by courtesy of the artist.)*

GEORGE BACK'S ASSESSMENT OF THE NORTH KOREANS WAS THAT THEY WERE UNPREDICTABLE AND "FREQUENTLY IRRATIONAL."

unit history understated the case when it noted the RB–47 "was severely damaged and smoke was observed throughout the aircraft."[6]

Lieutenant Colonel Mattison alerted the crew that he had control of the aircraft but to be prepared for bailout. Later, George Back wrote, "That RB took a lot of punishment. We leveled off at about 14,000 feet and began to determine how much of an airplane we had left. The copilot remarked that we were still trailing smoke and vapor and that the aft main tank still appeared to be burning. . . . All systems were on emergency power." Fortunately, there were no injuries among the crew. Rejecting a suggestion that he try for a landing in South Korea, Mattison headed for Yokota. At the same time, he directed Lieutenant Dubuy to get out the aircraft flight manual known as the "Dash-1" and turn to the "Emergency Procedures" section. When Dubuy asked which page he wanted, Mattison growled, "Just about any page will do." Enroute to Japan, Captain Winters used the Emergency Landing Gear Extension system to lower the gear in order to avoid the danger of electrical arcing. Upon arrival over Yokota, "Matt" briefed the crew that the landing would be rough and asked if anyone wanted to bail out over the runway. The reply was unanimous: "No, sir." Mattison instructed his copilot to deploy the parachute on the aircraft's second landing bounce and to stand on the brakes while he kept the wings level and tried to keep the airplane on the runway. As expected, the initial, nose-down touchdown was rough—so hard, in fact, that the RB porpoised 80 feet into the air and almost struck the on-scene rescue helicopter. George Back remembered, "Matt brought the aircraft to a stop on the runway and we exited, dodging emergency equipment as we headed for the edge of the runway."[7]

Although the details of the mission were omitted because of its classification, all six members of crew E-96 received the Distinguished Flying Cross for "extraordinary achievement." The aircraft itself, however, was scrapped. A portion of the RB–47 fleet was undergoing phase-out, and the damage was so severe that tail number 34290 "was dropped from the 55th's inventory." Today, four of the six E-96 crewmembers survive, Hank Dubuy, Bob Rogers, George Back, and Joel Lutkenhouse. They remain in contact with one another, brought closer by the events of that spring day in 1965. Dubuy is retired as a captain with Continental Airlines and resides in Texas, Rogers lives in Massachusetts, Back is retired in Florida and paints, and Lutkenhouse works as a realtor in Virginia. Following his death in the 1990s, Hobart Mattison was inducted into the 55 SRW Hall of Fame for his heroism in getting his aircraft and crew safely home on that memorable day in 1965.[8]

George Back's assessment of the North Koreans was that they were unpredictable and "frequently irrational." While greatly appreciative of Major Back's military service as well as his assistance with this project, I must differ with him on the question of the North Koreans' perceived "irrationality." Although North Korea's attempted shoot-down of the RB–47 was unsuccessful, the incident probably possessed a greater and previously unrecognized significance. The inaccessibility of North Korea's archives makes anything more than an educated guess problematic, but there is reason to believe that this seemingly isolated incident represented an attempt by the North to facili-

(Left to right) Lt. Col. Hobart D. Mattison (pilot), 1Lt. Henry E. Dubuy, Jr. (copilot), Capt. Robert J. Rogers (radar navigator), Capt. Robert C. Winters (Raven-1 EWO), 1Lt. George V. Back (Raven-2 EWO), 1Lt. Joel J. Lutkenhouse (Raven-3 EWO). *(Photo courtesy of George V. Back.)*

THE NORTH'S ATTACK ON APRIL 28 MAY HAVE BEEN NO LESS RATIONAL THAN IT WAS DIABOLICAL

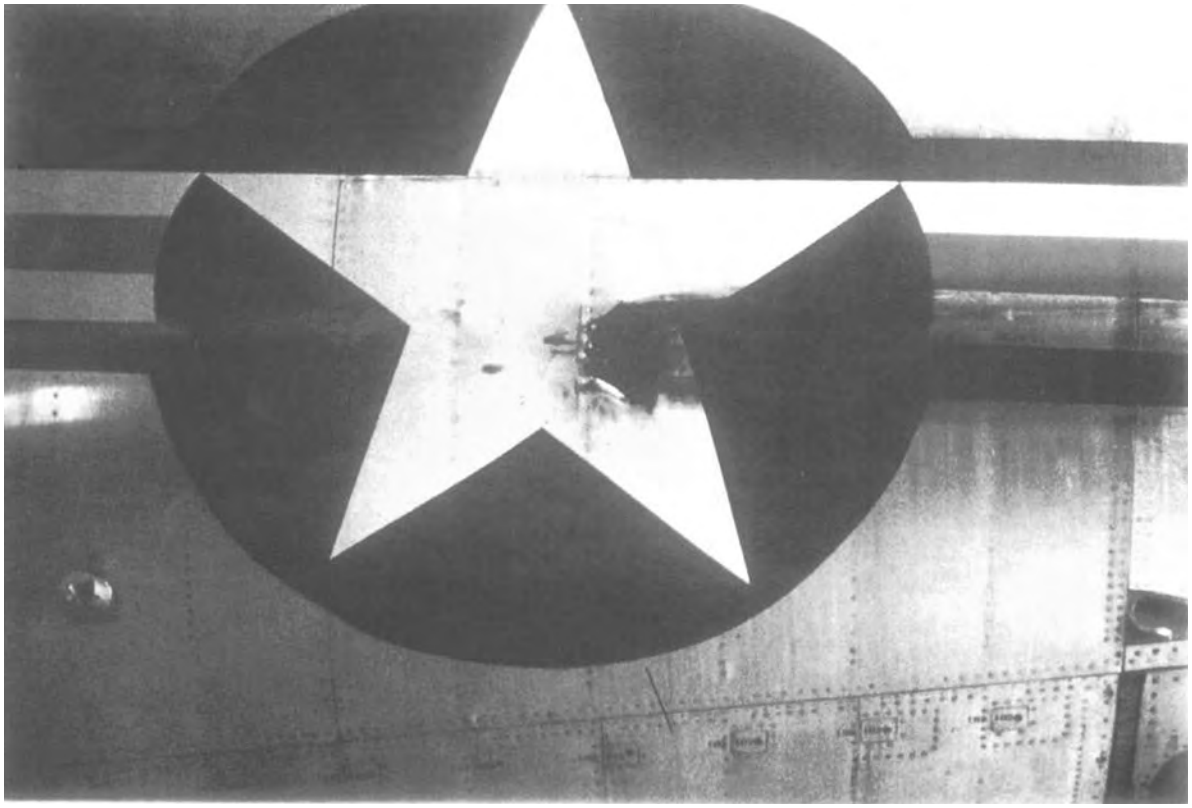
tate certain political objectives. In a 1999 book, *Over the Line: North Korea's Negotiating Strategy*, East Asian security specialist Chuck Downs argued persuasively that with the increasing American military involvement in the Southeast Asia conflict in the mid-1960s, North Korea attempted simultaneously to accomplish three objectives. First, the North sought to regain the attention of the United States; in other words, to continue to appear relevant as an American adversary. Second, Pyongyang likely wanted to reinvigorate its Marxist-Leninist cause, as their comrades in Vietnam were doing at that very time. Third, the regime appeared intent to exploit, as Downs wrote, the "greater space in which to operate without provoking American military retaliation." Furthermore, the presence of South Korean troops fighting on the American side in Southeast Asia must have strengthened the view from Pyongyang that American military operations in Southeast Asia were linked with the situation on the Korean Peninsula. In short, the North's attack on April 28 may have been no less rational than it was diabolical.[9]

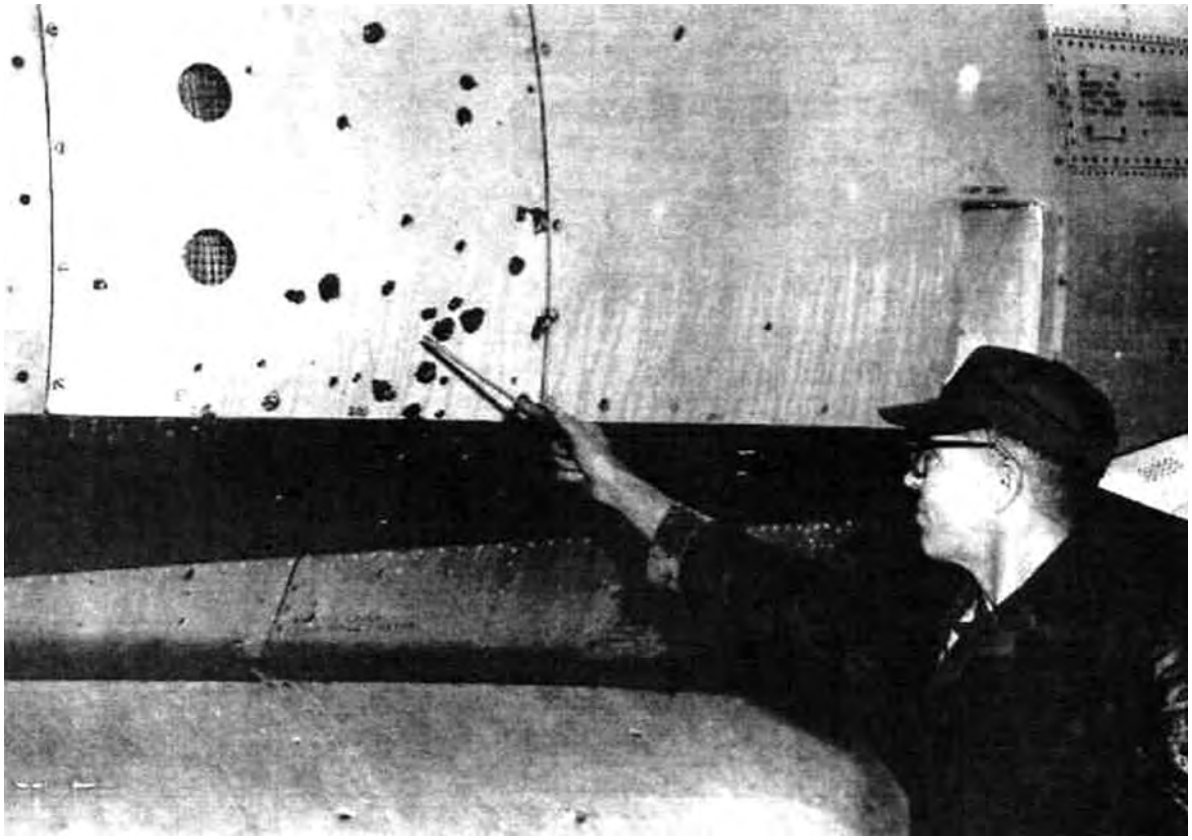
Among the North's major attacks on American and South Korean assets and personnel, Downs listed the sinking of a South Korean Navy patrol craft in the Sea of Japan (January 1967); the attempted assassination of South Korean President Park Chung Hee in Seoul and the seizure of the *USS Pueblo* in international waters (January 1968); the downing of a U.S. Navy EC-121 reconnaissance aircraft 90 miles off the Korean coast over the Sea of Japan (April 1969); and the shoot-down of an unarmed U.S. Army OH-23 helicopter that had inadvertently entered North Korean airspace (August 1969).[10]

The North's failed shoot-down attempt in the spring of 1965 deserves to be included in the list above. The first sustained American bombing campaign of North Vietnam, known as Operation ROLLING THUNDER, had begun in early March 1965. By late April, one may expect that the North Koreans felt at liberty to engage in a "pinprick" attack against an American reconnaissance aircraft operating near their airspace. It appears likely that the North's failed attempt to down the RB–47 represented—in addition to an egregious act of aggression—perhaps the earliest of its several attempts in the late 1960s to accomplish just what Downs argued in his book.[11]

Moreover, the RB–47 incident appeared to have been the first time that North Korea falsely claimed to have downed an American aircraft, beginning a pattern that has become more familiar in recent decades. Two days after the incident, Japanese newspapers reported that North Korean spokesmen claimed the American jet had crossed the fortieth parallel and that MiGs had "shot it down." One week after the failed shoot-down, the Soviets' publication *Izvestia* reported that, two days earlier, the head of the [North] Korean-Chinese delegation had stated that on April 28 an American RB–47 had intruded into the North's airspace and was subsequently shot down.[12]

The two photos at right show the damage suffered by the RB–47.





ON JUNE 16, 1959, UNIDENTIFIED MIGS ATTACKED A U.S. NAVY P4M "MERCATOR" AS IT CONDUCTED A RECONNAISSANCE MISSION

Before April 1965, North Korea's previous recorded attempt to shoot down an American aircraft over international airspace had taken place on June 16, 1959. On that date, unidentified MiGs attacked a U.S. Navy P4M "Mercator" as it conducted a reconnaissance mission well east of Wonsan, North Korea, over the Sea of Japan. One crewmember was wounded in the attack, but the Mercator managed to return to Japan and land safely. The jets had borne the red stars common to Soviet, Communist Chinese, and North Korean aircraft. Although the Americans could not positively

identify the attackers, within days the U.S. Government concluded that the jets most likely had been North Korean. Contributing to the uncertainty was that the North—though not denying the shoot-down attempt—made no claim to have attacked the American plane—much less falsely claiming to have downed it— as did the regime following the incident six years later.[13]

In conclusion, the failed shoot-down attempt in April 1965—in which a U.S. Air Force RB–47 may have actually downed one of its attackers—represented more than simply a dramatic Cold War story in which the "good guys" came out on top. From a broader perspective, the incident in which "Mattison's Drill Team" was an unwilling—but not unprepared—participant represented the North Korean regime's earliest known attempt to take advantage of the U.S. commitment to a sustained bombing campaign in Southeast Asia while simultaneously advancing other political objectives as well. Ironically, just two days after the incident, Mattison's crew was in the air again, flying what George Back referred to as its first "Southeast Asia mission" near Hainan Island, China. And on that day, the RB had an escort consisting of two Navy fighters. In the long run, Pyongyang's occasional practice of making wild and false shoot-down claims may, in fact, date from April 28, 1965, which was, indeed—and as George Back entitled his own 1996 painting of the incident—"A Hot Day in a Cold War.[14] ■

NOTES

1. Walter J. Boyne, "The Early Overflights," *Air Force Magazine*, vol. 84, no. 6 (Jun. 2001), 60-62; telephone discussion, Lt. Gen. E. G. "Buck" Shuler, Jr., USAF (Ret), with author, May 8, 2006. On Jul. 1, 1960, the Soviets downed a 55th Strategic Reconnaissance Wing RB-47H in international airspace over the Barents Sea, while it conducted a PARPRO sortie. One crewmember was known to have died, two survivors were later returned to U.S. control, and the remaining three crewmembers were unaccounted for. See History, 55th Strategic Reconnaissance Wing (Medium) [55 SRW (M) hereinafter], Jul.-Aug. 1960, pp. 15-18, Air Force Historical Research Agency (AFHRA hereinafter), Maxwell AFB, Ala., call no. K-WG-55-HI; History, 55 SRW (M), Jan. 1961, pp. 14-15, AFHRA; History, 55 SRW (M), Mar. 1961, pp. 16-18, AFHRA.

2. Interview, Maj. George V. Back, USAF Retired, with author, Apr. 9, 2005, Hurlburt Field, Fla.; Back mission summary, ca. 2000, emailed to author, Dec. 8, 2004; History, 55 SRW (M), Apr.-Jun. 1965, vol. I, pp. 22-25, AFHRA; Wolfgang W. E. Samuel, *I Always Wanted to Fly: America's Cold War Airmen* (Jackson, Miss., 2001), pp. 235-36. The 55 SRW's home station was Forbes AFB, Kansas.

3. Back interview; Back mission summary; Samuel, *I Always Wanted to Fly*, pp. 240-42.

4. Back interview; Back mission summary; Samuel, *I Always Wanted to Fly*, pp. 242-45. Note that Samuel refers to the same quote from Rogers but states he asked for a 90-degree turn; see page 245. Copilot Hank Dubuy mentioned another possibility: "Take [a heading of] 180, and I'll refine it in a second" (personal discussion, Dubuy with author, Randolph AFB, Texas, Oct. 14, 2005). In yet a third possibility, the 3rd Air Division message detailing the incident stated the RB-47 took a heading of 140 degrees after the attack began. (See Msg, 3rd Air Division, Det L, DO 00128 May [erroneous, should read "April"] 65 Section I of IV, DTG 01/1526Z, located in Hist, 55 SRW (M), Apr.-Jun. 1965, vol. II, Supporting Doc. 40, AFHRA.

5. Back interview; Back mission summary; Samuel, *I Always Wanted to Fly*, pp. 232-33; quotes from mission summary.

6. Back interview; Back mission summary; History, 55 SRW (M), Apr.-Jun. 1965, vol. I, pp. 22-25, AFHRA; quotes from page 24. In his interview, Back stated there are errors in the unit history's account of the incident, which disagrees with his account of the number of passes flown by the MiGs and the extent of the damage. Samuel's account states, "The two MiGs made three passes each"; see pg. 246. Although the account is unclear, the 55th wing history seems to mention five attack passes, three by the lead MiG, and two by the wingman; see pp. 23-24. The author contacted the historical offices of both the National Security Agency and Air Intelligence Agency in an unsuccessful attempt to determine the disposition of the MiG-17 last seen descending vertically through the clouds. If such data exists, it has not been declassified.

7. Back interview; Back mission summary; History, 55 SRW (M), Apr.-Jun. 1965, vol. I, pp. 22-25, AFHRA; Samuel, *I Always Wanted to Fly*, pp. 246-49.

8. Back interview; Back mission summary; Dept of the Air Force Special Order GB-251, Sep. 10, 1965, copy in possession of author; History, 55 SRW (M), Apr.-Jun. 1965, vol. I, p. 25, AFHRA; personal discussions between the author and surviving crewmembers, Apr.-Oct. 2005. Capt. Robert C. "Red" Winters passed away in January 1993.

9. Chuck Downs, *Over the Line: North Korea's Negotiating Strategy* (Washington, 1999), pp. 117-119. At the time, at least one newspaper suggested a link between the attack and the conflict in Southeast Asia; see Jack Raymond, "North Korea Jets Attack U.S. Plane," *Japan Times*, May 2, 1965, pp. 1, 8.

10. Downs, *Over the Line*, pg. 118-151; Luman H. Long, ed., *The 1970 World Almanac and Book of Facts* (New York and Cleveland, 1970), pg. 915.

11. Mark Clodfelter, *The Limits of Air Power: The American Bombing of North Vietnam* (New York, London, 1989), pp. 61-64; Downs, *Over the Line*, pp. 117-119.

12. Rpt, Hist of Fifth Air Force, Jan.-Dec. 1965, vol. I, AFHRA, call no. K730.01 (information used is unclassified); the unit history cites two Japanese newspapers, the *Mainichi Shimbun* and *The Yomiuri*, both dated Apr. 30, 1965; *Current Digest of the Soviet Press*, vol. XVII, no. 18 (May 26, 1965), p. 26.

13. Raymond, "North Korea Jets Attack. . ."; "Two Migs Jump Forbes Plane Off Korea Coast," *Topeka Journal*, Apr. 28, 1965, pg. 1; Fred S. Hoffman, "MIGs Attack Navy Plane Near Korea, Wound One," *Washington Post*, Jun. 17, 1959; Jack Raymond, "McElroy Hints North Koreans Made the Attack on U.S. Plane," *New York Times*, Jun. 19, 1959; "Red Korea Rejects U.S. Protest Over Attack on Plane," *Chicago Tribune*, Jul. 30?, 1959; Harry Hansen, ed., *World Almanac 1960 and Book of Facts* (New York, 1960), pp. 107-108. Apparently, there had been no similar incidents over the Sea of Japan for two years; see "Navy Denies Sending Missile-Armed Escorts," *Washington Star*, Jun. 18, 1959.

14. Back interview. The original painting is housed at a public museum, known informally as the "SAC Museum," near Omaha, Neb.

Air Records and War Flying

A.D. Harvey

(Overleaf) A French Deperdussin.

(Below) French Nieuports.

It is frequently said that war has been a major factor in speeding up technological progress. For example, it is regarded almost as a truism that World War I, in a mere fifty-one months, was responsible for pushing manned flight from infancy to something like maturity.

As so often, the apparent truism turns out to be not quite true. When war broke out in August 1914 the existing air-speed, altitude, and endurance records had stood since the previous year. On September 29, 1913, Marcel Prévost had flown at 126.67 mph (203.85 kph) in a Deperdussin monoplane—1 mph less than the unofficial land-speed record established by Fred Marriott in the Stanley Rocket back in 1906. Seguin had flown a distance of 634.5 miles (1021.2 km) in a Henry Farman on October 13, 1913. On December 28, 1913, Legagneux had reached a height of 20,300 feet (6,120 meters) in a Nieuport. All these records continued to stand as official records until after the war (an altitude record of 24,000 feet claimed by a German pilot, Olerich, in July 1914 was not recognized abroad).[1] During the war itself combat aircraft rarely operated at greater speeds and altitudes than the prewar records. The French SPAD XIII and the Italian SVA 5, both in service by late 1917, were 10 to 15 mph faster than Prévost's Deperdussin but the fastest German airplanes were capable of speeds less than 120 mph. And although in October 1918 the Canadian pilot W.G. Barker claimed to have shot down a German Rumpler C.VIII at 21,000 feet, aerial combat usually took place at much lower altitudes because of the lack of oxygen equipment.[2] As for the pre-1914 long-distance record, it seems to have been exceeded only once on a war mission.

IT IS FREQUENTLY SAID THAT WAR HAS BEEN A MAJOR FACTOR IN SPEEDING UP TECHNOLOGICAL PROGRESS

AS SO OFTEN, THE APPARENT TRUISM TURNS OUT TO BE NOT QUITE TRUE

At 9.30 p.m. on June 20, 1916, Sous-Lt. Anselme Marchal of the French Army took off in a Nieuport from an airfield near Nancy and after scattering leaflets over Berlin came down near Cholm, 63 miles short of the Russian front line. At 8.30 a.m. on June 21, after a flight of 811 miles (1,305 km), he became a prisoner of war. The reason for this capture was characteristic of the early days of flying—the filthy, primitive gasoline then in use had clogged up his sparking plugs. He had landed in a field in order to clean them with a rag, but was still fiddling with them when Austrian troops arrived.[3]

The Italian poet and war hero Gabriele D'Annunzio led a 620-mile formation flight to drop leaflets on Vienna on August 9, 1918, but the farthest distance flown by a heavier-than-air machine on a bombing mission in World War I was the 438 miles, completed by Captain de Beauchamp of the French army when, setting out from near Nancy on November 17, 1916, he dropped a number of small bombs in Munich before flying on to an aerodrome in northern Italy.[4] The attack on Constantinopale and Istinye carried out by a Royal Navy Handley Page 0/400 on the night of July 9/10, 1917, in which the Turkish torpedo boat *Yadiðar-i Millet* was sunk seems to have involved a slightly shorter distance.[5]

Probably the greatest single advance in aviation technology during the First World War had an inverse relation to the war. At the outbreak of hostilities the factory in Paris belonging to Marc Birkigt, the Genovese-born founder of Hispano-Suiza, was commandeered by the French government for the manufacture of French designed rotary engines. Birkigt, not entirely pleased,

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An N–11 prototype.

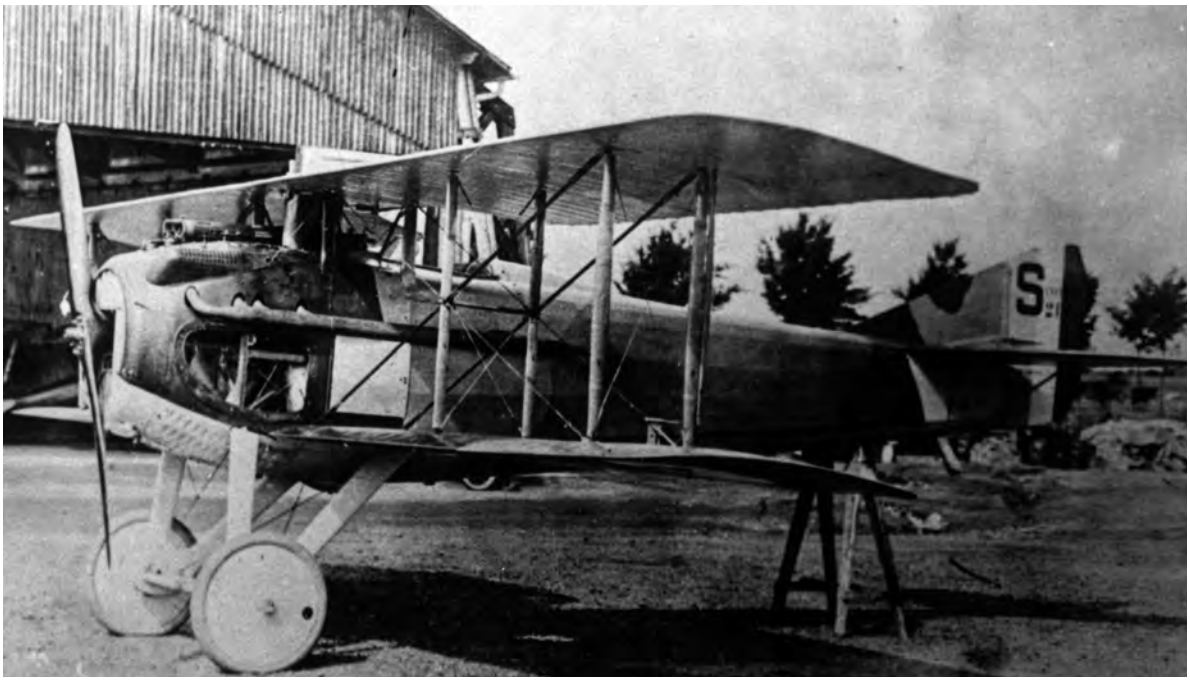
THE END OF THE FIRST WORLD WAR BROUGHT A SPEEDING UP OF THE RATE OF TECHNOLOGICAL PROGRESS IN AVIATION

removed himself to Barcelona, where he designed a revolutionary new aircraft engine with the cylinders and crankcase united in a single aluminium casting. For the same, or more, power this engine was 34 percent lighter than the best engine available to the Germans, and had half as many parts. It was subsequently used in most of the higher-powered Allied aircraft in service in 1917-1918, but if it had not been for the disruption of the war Birkigt would have probably been too busy to design it.[6]

The end of the First World War brought a speeding up of the rate of technological progress in aviation, with the development of high octane leaded gasoline (enabling much higher engine performance), stressed-skin construction, retractable undercarriage, superchargers, and variable pitch propellers. When the Second World War began, the existing airspeed records were 463.9 mph (746.6 kph) attained on March 30, 1939, by a modified German fighter prototype, the Heinkel He 100 V8 (officially labelled, for propaganda reasons, the Heinkel He 112 U) and 469.2 mph (755.1 kph) clocked up just under four weeks later by a specially designed racing plane, the Messerschmitt Me 209 V 1 (labelled, again for propaganda purposes, the Messerschmitt Bf 109 R).

Such speeds required the use of gasoline containing hot-burning additives such as benzol, methanol or nitrous oxide, which corroded the cylinders and greatly reduced their service life, and it was simply not practical economics to manufacture the vastly complex piston engines of the day, with all those valves and cams whirring in unison

A French Spad.



The Messerschmitt Me 262 jet.

or counterpoint, and then burn them out in a couple of hours with unsuitable fuel. Military aircraft also had to carry oxygen bottles, radios, guns, thousands of rounds of ammunition and, later, armor plate. Consequently, speeds in excess of 460 mph were not achieved in combat until the introduction of the Messerschmitt Me 163B rocket fighter and the Messerschmitt Me 262 jet in July 1944.

THE PRE-1939 ALTITUDE RECORD—STILL THE RECORD FOR A PISTON-ENGINED AIRPLANE—WAS 56,046 FEET

The pre-1939 altitude record—still the record for a piston-engined airplane—was 56,046 feet (17,083 metres) attained by an Italian Caproni 161bis special research plane on October 22, 1938.[7] In 1942, the Luftwaffe operated Junkers Ju 86R reconnaissance bombers over the U.K. at up to 42,000 feet, just below the level of the highest cirrus clouds, and Squadron Leader G.W.H. Reynolds claimed to have shot down a similar plane, in exceptionally favorable atmospheric conditions, at 49,500 feet near Alexandria on August 24, 1941.[8] Most aerial combat, of course, took place at much lower altitude. Among other factors militating against high-altitude interceptions was the near-impossibility of maneuvering piston-engined aircraft in the thin air above 30,000 feet.

In November 1938, two specially adapted Vickers Wellesley single-engined bombers of the R.A.F. flew 7,162 miles (11,526 km) from Egypt to Australia in 48 hours nonstop, surviving heat bumps over the Arabian desert, storms over the Bay of Bengal, and a whole night of thick cloud, rain, lightning and St. Elmo's Fire over the South China Sea. "The planes are in awfully good shape," reported lead pilot Squadron Leader Kellett from Australia, "the fabric bare and torn in places from rain, otherwise as new and very clean."[9] The same could not be said for the crews, for in spite of having an extra crew member on each plane, and Mark IV automatic pilots, hardly anyone had more than half an hour's sleep during the two-day flight. This helps explain, again, why wartime combat missions never came near equalling the prewar records.

Various air forces sent bombers on round trips of over 2,000 miles. On the night of June 7-8, 1940 a French Navy Farman 223.4 flying from Bordeaux dropped two tons of bombs in fields just outside Berlin. And in October 1940, four Italian Savoia-Marchetti SM 82 trimotors flying from Rhodes attempted to bomb Bahrain before landing in Eritrea, but succeeded only in damaging an American-owned pipeline in Saudi Arabia—not exactly a medal-winning military achievement since at that stage of the war both the U.S. and Saudi Arabia were neutral.[10]

In May 1943, an Italian SM 75GA trimotor completed a 24-hour, 3,700 mile round trip from Rhodes to Eritrea, but failed to drop its bombs even within hearing distance of the American air base at Gura; the Americans remained unaware that they had been attacked.[11]

In November 1944, American Boeing B–29 Superfortresses began bombing the Japanese Home Islands from the Marianas, which involved round trips of about 3,000 miles; the maximum loading for such a mission was 5 tons of bombs and more than 24 tons of gasoline.[12] In order to make the 3,460-mile round trip from Ceylon to Singapore and back, Royal Air Force Liberators carrying out a mine-laying mission in March 1945 had to be stripped of most of their defensive armament, and all their armor-plate and oxygen equipment; even their chemical toilets had to be left behind.[13] Obviously such aircraft could have been used to fly longer distances with smaller bomb loads. In fact the Germans were developing a bomber, the Messerschmitt Me 264, which was said to be capable of attacking New York, and the

A Vickers Wellesley.

THE IDEA THAT THE WAR FORCED THE PACE OF TECHNOLOGICAL DEVELOPMENT… SEEMS TO BE A MYTH

Japanese were thinking of bombing Seattle, Los Angeles, and the locks of the Panama Canal.[14] But the simple facts of geography militated against carrying out really long-ranged intercontinental missions except as stunts or in special cases.

In other words, the idea that the war forced the pace of technological development—as far as aviation is concerned—seems to be a myth. Even so vital an adjunct to air warfare as radar was essentially a pre-1939 development. The one instance of a massively-funded wartime development program revolutionizing technical knowledge was the atom bomb—which ever since has been taken to epitomize a technology that has escaped from the realm of scientific, political, and administrative rationality. ■

NOTES

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3. Gerard and Bertrand Pommier, *Les Frères Nieuport et leurs Avions* (Paris, 2004) p. 193 and *The Times* July 25, 1916, p.6b.

4. Luigi Contini, *L'Aviazione Italiana in Guerra* (Milan, 1934) p. 202-10, Giulio Lazzati, *Stormi d'Italia: Storia dell'Aviazione Militare Italiana* (Milan, 1975) p.12, *The Times* Nov. 18, 1916, p. 8b and *Münchener Neueste Nachrichten* Nov. 18, 1916, p.3d.

5. Walter Raleigh and H.A Jones, *The War in the Air: being the story of the part played in the Great War by the Royal Air Force* (6 vols. Oxford 1922-37) vol. 5 pp. 405-407, Chaz Bowyer, *Handley Page Bombers of the First World War* (Bourne End, 1992) pp.36-37, and, for the aircraft commander's official account of the mission, The National Archives, Kew, AIR 1/649/17/122/402.

6. Jacques Desforges, 'Marc Birkigt (1878-1953)', in Aymon de Mestral et al. *Pionniers Suisses de l'Economie et de la Commerce* (Zurich, 1964) p. 3463 at p.43.

7. *The Times* Oct. 24, 1938 p. 13e gives the height achieved, incorrectly, as 56,017 feet/17,074 metres, but see Michael Taylor and David Mondey, *Guinness Book of Aircraft Facts & Feats* (Enfield, 1984), p. 135.

8. *Ibid*. p. 162: but according to Alfred Price, *Spitfire Mark V Aces 1941-45* (London, 1997) pp. 64-65 Reynolds intercepted the Junkers Ju 86 P at an altitude of only 42,000 feet and it got away.

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11. Vittorio Carassai, "Il piu Iungo volo di guerra delle ali italiane, "*Rivista Aeronautica,* Sept. 1971 p. 1664-66 cf. William Lunsford, Jr., 'History and Background of the 83d Air Depot Group,' declassified USAF unit history, typescript, available from Air Force History Support Office, Bolling Airforce Base, Washington D.C.

It was later claimed that early in 1944 a six-engined Junkers Ju 390 on a test flight from Mont de Marsan, near Bordeaux, came within twenty kilometres of the American coast north of New York before returning to base, but to see Karl Kössler and Günther Ott, *Die grossen Dessauer: Junkers Ju89, Ju90, Ju290, Ju390: die Geschichte einer Flugzeugfamilie* (Planegg 1993) p. 103-5 which after reviewing the evidence dismisses this sortie of over 6000 miles as a "fairy tale."

12. Wesley Frank Craven and James Lea Cate, *The Army Air Forces in the World War II* vols Chicago 1948-58) vol 5, p. 95.

13. Henry Probert, *The Forgotten Air Force: the Royal Air Force in the War against Japan, 1941-1945* (London, 1995), p.288.

14. Heinz J. Nowarra, *Die Deutsche Luftrüstung 1933-1945* (4 vols. Koblenz 1985-88) vol 3, p. 2324: René J, Francillon, *Japanese Aircraft of the Pacific* War (2nd ed., London, 1979) p. 259-61.

The First Space Race? The Explorer II Balloon Flight of 1935

George A. Larson

(Overleaf) A ground cloth has been laid out so when the balloon was uncrated and laid out, the rough ground would not tear the fragile fabric. The motorcycle and its side care are used to hold down on end of the balloon while it is being positioned prior to inflation . The stacks of the helium tanks are visible to the left and behind the balloon. November 10, 1935

(Above) Prior to the launch of Explorer II, U.S. Army soldiers from Fort Mead transported in the helium cylinders and equipment for the launch. The soldiers and their trucks lined along the road before leaving Fort Mead for the Strato Bowl. November 9, 1935. *Except where noted, photographs courtesy of the Journey Museum's "The Black Hills Journey into the Space Age," the 70th anniversary of the flight of Explorer II, exhibit held at the Adelstein Gallery, Journey Museum, Rapid City, South Dakota, October 2 through November 13, 2005.*

In 1933, Capt. Albert W. Stevens, who had a long interest in aerial photography and high-altitude scientific observation, submitted a written proposal to Headquarters, U.S. Army Air Corps (USAAC), for a high-altitude manned balloon flight. The flight's mission was to collect scientific data on the composition of air, wind direction and velocity, temperature, pressure, cosmic rays, solar spectrum and effects of altitude on radio transmissions. Maj. Gen. Benjamin D. Foulois approved the proposal, but only on condition that someone else would pay for the flight, including the balloon, gondola, instruments, and hydrogen or helium to inflate and lift the balloon into stratosphere—above the altitude at which manned aircraft fly. Captain Stevens contacted the National Geographic Society to inquire about monetary assistance. He asked they fund the balloon costs, with the Air Corps providing the flight crew and ground support personnel.[1]

While initial planning was in progress in Washington, D.C., the U.S. Navy (USN) flew its first high-altitude manned balloon flight on November 20, 1933. Lt. Cmdr. G. W. Settle (USN) and Maj. Chester Fordny (USMC) flew a 60,000-cubic-foot hydrogen-filled balloon (built by the Goodyear Company) to an altitude of 61,237 feet. In quick follow-on, the Soviet Union launched a manned balloon on January 30, 1934, attaining an altitude of 72,200 feet, beating the American record, but its three-man crew was killed when the capsule crashed.[2]

The National Geographic Society agreed to fund the Air Corps flight, and contracted with the Goodyear Company to fabricate a 3 million-cubic foot balloon, designed to be inflated with helium. Helium was more stable, less volatile than hydrogen, requiring a larger volume to provide the same lift capacity as hydrogen. The balloon was named Explorer I.[3] The Dow Chemical Company built the gondola out of 1/5th-inch thick magnesium alloy metal, 100-inches in diameter, with an interior crew space diameter of 60-inches. Captain Stevens designed and built many of the instruments for the flight, with the remaining ones purchased off-the-shelf. He mounted the instruments inside and outside the gondola; some on top and others hanging under the gondola by rope. To lighten the gondola's payload as it neared the ground and to create a controlled and safe landing, most of the instruments were thrown out of the gondola or cut off from the connected ropes, dropped to the ground by small parachutes attached to the instruments for recovery, with the precious data recorded inside.[4]

Captain Stevens was the flight's scientific observer, Maj. William E. Kemper the commander, and Capt. Orvil A. Anderson in charge of ground support operations and alternate pilot. The trio selected a launch site twelve miles southwest of Rapid City, South Dakota, in the Black Hills, which they nicknamed the Strato (for Stratosphere) Bowl. The site was a natural basin, deep enough to protect a balloon from prevailing wind gusts during the critical time period of helium inflation and wide enough to allow the inflated balloon to be moved from one side of the basin to the other. It would allow the launched balloon and gondola hanging below to clear the rim above, determined by the direction of the prevailing wind.[5]

After launch, the balloon flight followed predicted parameters until reaching an altitude of 60,000 feet, at which point the three-man crew noticed a tear in the gas envelope above their gondola. The crew immediately began venting helium to terminate the flight, bringing them back to the ground. When the balloon reached 18,000 feet, the crew opened the gondola's hatch to inspect the damage, believing the balloon should be able to safely reach the ground. As the balloon continued to descend, the bottom panels ripped off. The remaining section of the balloon created a large parachute, which then collapsed. The crew abandoned the damaged balloon, parachuting safely to

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One of the U.S. Army trucks carried the gondola for Explorer II to the Strato Bowl. November 10, 1935

the ground, landing near Holdredge, Nebraska, with the gondola crashing close by.[6]

After inspecting Explorer I's damaged fabric panels, the Goodyear Company modified the design for Explorer II. The lower panels retained the same construction, with the top panels of two-ply fabric, inserted to allow for gas expansion and made stronger to provide a safety margin as the balloon rose to high-altitude. The Goodyear Company incorporated the USN's non-rigid airship deflation panel design to allow rapid emergency release of helium and strong enough to resist tearing at high-altitude. Explorer II's gondola was redesigned to cut its weight, reducing strain placed on the balloon's fabric panels, and its crew cut from three to two. The weight was reduced to 14,000 pounds, from Explorer I's 18,000 pounds, with lead dust ballast part of the total weight. The lead dust ballast controlled the balloon while climbing to maximum altitude, periodically released to maintain rate-of-climb. The new balloon required 220,000 to 230,000 cubic feet of helium to inflate. Also, the balloon was fitted with an auxiliary inflation sleeve to allow additional helium capacity to compensate for water weight accumulated during inflation from rain, dew or frost. This balanced the launch load to allow the balloon to reach its programmed altitude.[7]

On July 11, 1935, Explorer II was ready. However, during inflation, the balloon collapsed after one fabric panel's seam ripped loose, draping the balloon's fabric over the gondola and trapping the two-man crew inside. Air Corps ground support personnel rescued the men, without damaging the balloon's fabric. The failure was traced to a manufacturing defect, where the seams were not double stitched.[8] Ground personnel repaired the loosened panel, but by the time the repair work had been completed, weather closed the launch window. For the next launch, volunteer ground observers were positioned thirty miles apart in the shape of a fan radiating out from the launch site to monitor the balloon once it flew, east of Oakland Lakes, northeast of Brookings, South Dakota, to Quinn, Nebraska. The balloon's flight path would be constantly monitored by radio communications between the airborne crew and the launch command center. Ground observers recorded the location and measured angle of the passing balloon, required to verify the airborne instruments' recordings.[9]

The operations plan for Explorer II started with unpacking the balloon from its airtight crate at 1 p.m., one day prior to launch. Inflation started at 4:00 p.m., in order to be completed by midnight, ready for a dawn launch. The inflation ordered brought ground support from nearby Fort Mead, consisting of 300 personnel, to handle the 3.7 million-cubic-foot balloon and patrol the cliffs above the Strato Bowl.[10] Beginning at 6:30 p.m., on November 10, ground crew personnel began to inflate the balloon, taking longer than planned because they had carefully attached the balloon to

The fabric sleeves allow the helium form the tanks to be vented to the balloon for inflation. The fabric sleeves are weighed down by sand bags to keep them in position. The helium tanks were covered with pine branches to keep them from getting warm during the day and expanding pressure inside. November 10, 1935

(Above)The balloon is just beginning to inflate from the helium tanks. The inflation sleeves are visible and the area is lighted by flood lights operated by portable generators. November 10, 1935

(Above right) Inflation continues and it slowly rises as the helium goes to the top of the balloon. November 10, 1935

(Below) These visitors are looking at the paunch preparations for the summer 1935 balloon launch of Explorer I. July 11, 1935

the gondola, spreading the large mass of the fabric over on the ground to prevent wrinkling and tearing.[11] Fort Mead soldiers brought in 1,600 helium gas cylinders to the launch site.[12] Military police patrolled the rim above the launch site to control the expected crowd of 21,000 to watch the historic event. They patrolled the Strato Bowl's rim, guarding open camp fires to keep those collected from freezing in the sub zero temperature, directing arriving cars and trucks to designated parking areas and general safety to keep them away from the rim's edge. Military police reunited separated family members and directed spectators to viewing areas, and prevented open fires from accidentally spreading into the surrounding forest.[13]

Balloon inflation proceeded normally until 10:45 p.m., when the ground crew located a twenty-foot tear in the fabric.[14] It took the ground crew an hour to patch and reinforce the torn panel. The completed repair was so close to original construction specifications, Goodyear Company engineers inspecting the tear had to be shown the repair area. Inflation resumed until 135,000 cubic feet of helium was in the balloon, by 2:50 a.m. The helium rose and concentrated at the top of the balloon, lifting it to a height of 315 feet.[15] The inflated balloon set records before it was launched:

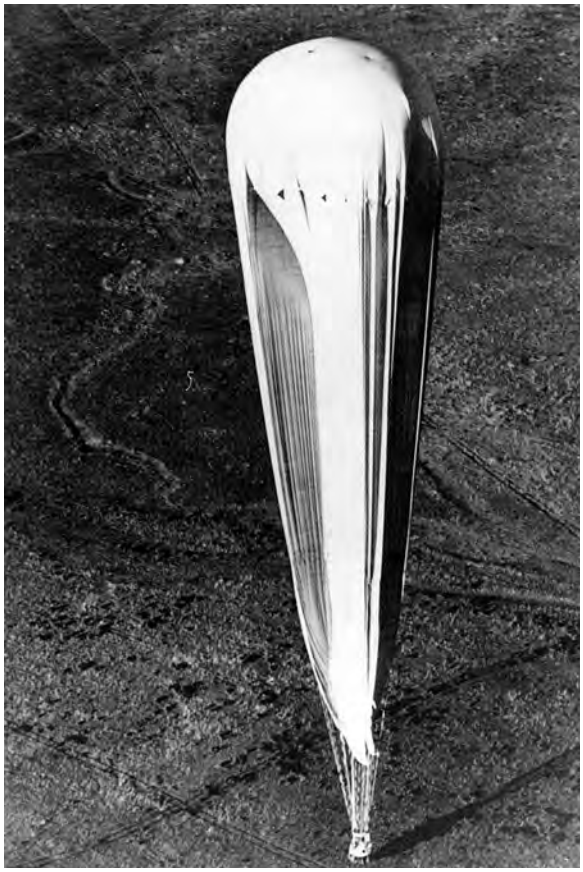
1. The balloon's 115,845 square feet of fabric was the largest constructed.
2. The gondola's nine-foot-diameter and 382 cubic foot volume, the largest built.
3. Instruments carried inside and outside the gondola designed to collect and measure data at high-altitude were the most varied.[16]

The instruments carried on the flight operated automatically, with readings recorded every 90 seconds by machine-driven cameras. Establishing a new high-altitude record was secondary to measuring temperature and barometric changes from the ground to the maximum attained flight ceiling. Collected air samples would be shipped to and analyzed by the National Geographic Society laboratory in Washington, D.C. The flight was to study cosmic rays to learn about their nature, behavior, and origin. Other instruments collected data on sunlight to learn more about the earth's ozone layer, as well as observing sky, sun, and earth brightness at high-alttiude.[17]

At dawn, the ground crew moved the inflated balloon and attached the gondola, positioned the joined unit at the western edge of the basin in order to clear the rim above because of the westerly wind.[18] The crew consisted of Captain Anderson, the pilot, and Captain Stevens, the commander. At 7 a.m., they released the ground tether lines.[19] The gondola cleared the eastern rim of the Strato Bowl

(Near right) Inflation is filling the balloon and guide ropes securing the balloon to the ground are visible from the crown section of the balloon. November 10, 1935

(Far right) The balloon as it nears the ground near White Lake, South Dakota. November 11, 1935



by 50 feet. At launch, the balloon and gondola were 8,000 pounds lighter than planned because the westerly wind shift forced the crew to get into the air as soon as possible. At 50 feet above the rim, an unexpected down draft hit the rising balloon, requiring the release of 750 pounds of lead dust ballast to keep the gondola from crashing back into the spectators gathered around the rim.[20]

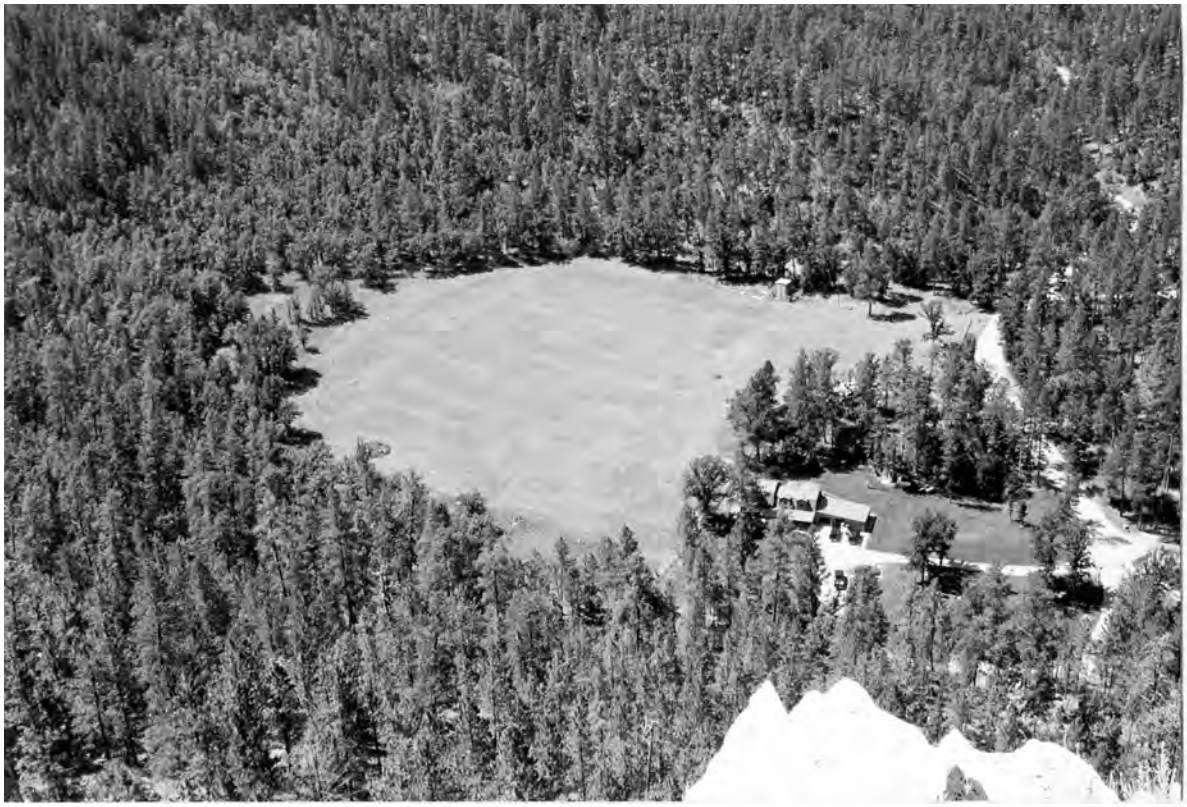
The gondola on the ground near White Lake, South Dakota. On top right is USAAC Captain Albert W. Steven and right Captain Orvil A. Anderson. November 11, 1935

At 7:15 a.m., the balloon climbed to an altitude of 11,400 feet.[21] At 7:37 a.m., Capt. H. K. Baisley, flying in chase plane to monitor the balloon's ascent, confirmed this altitude, with the balloon's location over the Cheyenne River, southeast of Rapid City. Captain Baisley radioed the ground command center that he could see the crew inside the balloon's gondola mounting instruments on top of and underneath the capsule, then closing the hatch in preparation for the high-altitude section of the flight.[22] Captain Stevens rigged the instruments to be suspended below the gondola by rope, while Captain Anderson secured instruments to the top of the gondola. Those instruments not already recording, including the gondola's air purifier, were turned on. Captain Anderson maintained the balloon's rate of climb at 400 feet per minute.[23]

At 9:07 a.m., the balloon reached 21,000 feet over the Niobrura River, Nebraska.[24] At 9:25 a.m., the balloon's rate of climb was increased to 500 feet per minute, passing through 28,000 feet. The balloon's flight path was along the general directional line between Sioux Falls, South Dakota, and Sioux City, Iowa. At 10:17 a.m., the balloon passed through 56,000 feet. At 1:28 a.m., Captain Anderson radioed, "We are at 60,000 feet. We're not going to stop until we hit the ceiling and we'll stay there about an hour and a half. The atmosphere in the gondola is fairly dry, but the windows were frosting. The inside temperature is 6 degree below." Captains Stevens added his own comments, saying that the instruments were working O.K., indicating the earth's radiance at 200 candles.[25] As the balloon neared maximum altitude, Captain Anderson reduced the rate of climb to 200 feet per minute.

(Above) On the top of the eastern edge of the Strato Bowl rim is a plaque indicating the flight of Explorer II. ***(Photograph from the author's collection, taken on August 10, 2005.)***

(Right) View from the eastern rim of the canyon, looking down into the Strato Bowl. Today the Strato Bowl is privately owned and not opened to the public. The area provided ample room for the inflation of the balloon and positioning so it could clear the canyon's edge. ***(Photograph from the author's collection, taken on August 10, 2005.)***



View looking up from the road on the north edge of the Strato Bowl, with the center of the photograph, the location of the memorial plaque for Explorer II. The photograph was taken with a telephoto lens to show the rough characteristics of the rim's cliffs and top, which the balloon had to clear immediately after launch. *(Photograph from the author's collection, taken on August 10, 2005.)*

The balloon slowed, reaching an altitude of almost 73,000 feet, approximately four hours after take-off from the Strato Bowl. At 11:22 a.m., the balloon reached 74,000 feet, with Captain Anderson adjusting trim to maintain this altitude, cruising at high altitude for one hour and forty minutes.

Captain Anderson attempted to locate and identify stars but was unable to do so. The sky was dark blue, tinged with purple. Fourteen miles below the gondola, the earth lost most of its visible detail, with the horizon an indistinctive blur. Railroad tracks and highways were barely visible, with only rivers, towns, and checkerboard designs from farm and ranch lands distinguishable. At 12:30 p.m., Captain Anderson began releasing helium to start the glide to the ground.[26] By 1:47 p.m., the balloon reached 40,000 feet, 75 miles southeast of Yankton, South Dakota. At 2:13 p.m., the balloon had descended to 31,000 feet, 50 miles west of Yankton, South Dakota.[27]

At 25,000 feet, the two crewmen began throwing out lead dust ballast. At 16,000 feet, they released the final 2,000 pounds. Captain Stevens began throwing out excess cargo and instruments through the open gondola's hatch. Discarded instruments were fitted with a parachute to allow the equipment and instruments to be retrieved by the chase crew. At 15,000 feet, Captain Anderson identified a suitable landing area, reducing descent to 500 feet per minute. At 1,500 feet, he tossed out the final battery, then assisted Captain Stevens in throwing out the remaining 40 pounds of lead dust ballast. The release of the lead dust ballast slowed descent to 100 feet per minute, with the final descent at 50 feet per minute. As the balloon neared the open field, Captain Anderson dropped a drag rope to a civilian car below. He could not understand why the motorist did not stop his car and grab the rope to assist in the balloon's landing.[28] The motorist was Henry Ubel who had been following the balloon for ten miles. His car was within fifty feet of the descending balloon's gondola, just prior to its landing on the farm belonging to John Mathey.[29]

Captain Anderson pulled the ripcord to deflate the balloon when the gondola was approximately two feet from the ground, rapidly releasing remaining helium. When the gondola hit the ground, it rolled to an angle of 90 degrees, ending the record breaking flight at 3:10 p.m., 240 miles from the Strato Bowl, 12 miles south of White Lake, South Dakota.[30]

After the landing, the Strato Bowl launch base was dismantled. Meteorological and support equipment was trucked to Fort Mead for storage, pending dispostion.[31] Camera film from each instrument and hand held photos were flown to Washington, D.C. for analysis after recovery either from the gondola or retrieved from instruments parachuted to the ground.[32] Explorer II's gondola was shipped to National Geographic Society's office in Washington, D.C.[33]

This historic balloon flight was honored by special stratosphere flight postal covers, carried inside the gondola by the two-man crew. These envelopes carried an initial cancellation mark of 4:00 a.m., July 12, 1935, for the Explorer I's flight. A second cancellation mark was stamped on the envelope at 5:00 a.m., November 11, 1935, at the Rapid City Post Office. The final cancellation mark was added to the envelope at White Lake, after the landing. The canceled envelopes were driven to Rapid City and then out by air mail.[34].

Epilogue

Today, the Strato Bowl is privately owned, not part of the U.S. National Park System. Above the

(Far right) Entrance to the Journey Museum, Rapid City, South Dakota. It held a special exhibit honoring the 70th anniversary of the flight of Explorer II. *(Photograph from the author's collection, taken on October 2, 2005.)*

(Near right) The center piece of the Journey Museum's exhibit was a scale mode of the gondola of Explorer II. The lead dust ballast bags are positioned around the exterior of the gondola, used to control rate of climb and during landing, slowing prior to hitting the ground. *(Photograph from the author's collection, taken on October 2, 2005.)*

Strato Bowl's eastern rim is a part of the Black Hills National Forest, with a section designated as an overlook down into the natural basin and former balloon launch site. There is an unmarked access off U.S. Highway 235, Gate Number 34, Black Hills National Forest. No marker indicates what is beyond, approximately six-tenths of a mile, a medium walk up and down gradual elevations to the eastern rim of the Strato Bowl. The walk off the main road leads to a seldom traveled portion of the Black Hills National Forest.

Over the years, the Strato Bowl served as a launch site for several later atmospheric flights. On November 8, 1956, an 800,000-cubic-foot balloon, flown by USN Cmdrs. Malcolm Ross and Lee Lewis took-off, reaching an altitude of 76,000 feet, collecting radiation data. On November 28, 1959, a 2 million-cubic-foot balloon, flown by Commander Ross and balloonist-scientist Charlie Moore took-off from the Strato Bowl, reaching an altitude of 82,000 feet. Then, the Navy shifted emphasis to hot air balloons. One of these balloonists, Ed Yost, was sponsored by Raven Industries of Sioux Falls, South Dakota, and the Office of Naval Research. Ed Yost sat in an open sling seat, suspended below a 27,000-cubic-foot, 40-foot-diameter, mylar and nylon, hot air balloon. Lift was provided by a propane burner, fed from three butane gas tanks, assisted by the release of ballast. He reached 9,000 feet, remaining at that altitude for one hour and fifty-two minutes, retaining a thirty minute reserve, landing east of New Underwood, South Dakota, south of U.S. Highway 16.[35]

Perhaps the most celebrated hot air balloon launched from the Strato Bowl was on January 8, 1996, by Steve Fossett. The morning of the launch I left my home in Rapid City, South Dakota, driving my son's four wheel jeep, because of the snow, cleared by security into the Strato Bowl. It had snowed and it was very cold, flash back to the Explorer II launch from the same location. I had a press pass to be in the basin as final preparations for the launch were in progress. There were many distinguished visitors around the balloon, including the Governor of South Dakota, Bill Janklow. The hot air balloon, named "Solo Challenger," was a mylar-sided balloon, with a maximum capacity of 60,000 cubic feet, 150 feet tall and 50 feet in diameter. After launch, it was designed to fly at altitudes of 18,000 to 30,000 feet, powered by a flame burner fed from propane tanks attached around the exterior of an unheated and unpressurized capsule. Each tank was jettisoned when empty, eliminating dead weight, giving the balloon its projected long range. Steve Fossett's objective was to be the first to complete a nonstop, solo, around-the-world, hot air balloon flight. He was the professional promoter, selecting the Strato Bowl as the launching point for this historic flight attempt. He took-off at 6:37 a.m. The launch was trouble free and the balloon headed on a wind driven southeasterly track. But the flight did not go as planned, forcing him to land in an open field near New Brunswick, Canada on January 11, 1996, before crossing out into and over the North Atlantic. He later completed his goal, but not from the Strato Bowl.

Four granite slabs, engraved with the historic balloon flights from the Strato Bowl are now set up on the top of the eastern rim, protected by an eight foot tall chain link fence, because of its isolated and unguarded location. The engraved slabs were donated and set-up by balloonist Ed Yost, with approval by the Black Hills National Forest. At the dedication ceremony, he commented that the eastern rim of the Strato Bowl would be an ideal location to build a balloon museum. This would require paving the rock and unguarded trail to the site, parking and construction of the museum. South Dakota had been the home of a museum devoted to balloon history, at Mitchell, but is now closed. Any museum at the eastern rim is only a conceptual idea, which will take years of negotiations with Black Hills National Forest managers, obtaining funding, construction and environmental impact studies, approval by local, state and Federal agencies.[36]

Last year, to celebrate the 70th anniversary of Explorer II's flight, the Journey Museum, Rapid City, South Dakota,created a special exhibit, "The Black Hills Journey into the Space Age," held from October 2 through November 13, 2005. The exhibit consisted of photographs of the preparations, airborne flight and landing of Explorer II. A scale model replica of the gondola was the center piece of the exhibit. Six local story tellers held presentations in the exhibit room on Explorer II. ■

NOTES

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2. "Seeking height of 14 miles in 1935 ascension," *The Rapid City Journal*, November 10, 1935, p. 1.
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7. "Balloon rises at dawn tomorrow," *The Rapid City Daily Journal*, November 10, 1935, p. 1.
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10. "Balloon rises at dawn tomorrow," *The Rapid City Daily Journal*, November 10, 1935, p. 1.
11. "Log of Explorer II," *The Rapid City Journal*, November 11, 1935, p. 1.
12. "Camp here to be abandoned," *The Rapid City Daily Journal*, November 12, 1935, p. 1.
13. "Military police guards thousands," *The Rapid City Daily Journal*, November 11, 1935, p. 1.
14. "Log of Explorer II," *The Rapid City Journal*, November 11, 1935, p. 1.
15. "Repair tear in balloon fabric," *The Rapid City Daily Journal*, November 10, 1935, 1.
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20. "Could have gone 5,000 feet higher, Anderson asserts," *The Rapid City Journal*, November 12, 1935, p. 1.
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23. Anderson. See note 20.
24. "Log of Explorer II," *The Rapid City Daily Journal*, November 12, 1935, 1.
25. "Shatter world high mark at 11:22 a.m., 74,000 feet," *The Rapid City Daily Journal,* November 11, 1935, 1-2.
26. Anderson. See note 20.
27. "Log of Explorer II," *The Rapid City Daily Journal*, November 12, 1935, 1.
28. Anderson. See note 20.
29. "Down like feather, rolls over on side," *The Rapid City Daily Journal*, November 12, 1935, p. 1.
30. Anderson. See note 20.
31. "Leave balloon for Washington," *The Rapid City Daily Journal*, November 12, 1935, p.1.
32. "Bronson first car there," *The Rapid City Daily Journal*, November 12, 1935, p. 1.
33. "Camp here to be abandoned," *The Rapid City Daily Journal*, November 12, 1935, p. 1.
34. "Strato covers arrive in Rapid City," *The Rapid City Daily Journal*. November 12, 1935, p. 2.
35. Letter, Edward Yost, Vadito, New Mexico, to Lt. Col. George A. Larson, USAF (Ret.), August 14, 2004.
36. Yost. See note 35.

Spying from Space: Constructing America's Satellite Command and Control Systems. By David Christopher Arnold. College Station: Texas A&M University Press, 2005. Photographs. Notes. Bibliography. Index. Pp. xx, 209. $32.95 ISBN: 0-58544-385-9

In this relatively small book, David Arnold, a U.S. Air Force strategic planner, provides the most complete history so far of the origins and evolution of satellite command and control in the United States. In six chapters, he revisits, using archival documents and interviews of those present at the time, the invention and development of the first satellite command and control system (essential to capture satellite telemetry and command uplink to a satellite). He balances his narrative between the highly technological aspects of the system and the human and bureaucratic factors that affected it and, more generally, the reconnaissance satellite program.

As Arnold notes, satellite command and control similarly evolved in the civilian and military world, but the systems were built differently and independently. In the military, the satellite command and control system came into being outside of the normal Air Force research and development bureaucracy and was first used to support the reconnaissance satellites of the National Reconnaissance Office, set up as the Office of Missile and Space Systems on August 31, 1960. Managed by the Air Force Satellite Control Facility (AFSCF–it was subordinate to the Air Force Systems Command until the 1980s), the system was composed of operating and remote tracking stations which evolved into a network capable of simultaneously supporting several satellites. The AFSCF, however, was plagued by several problems throughout its first decade. For instance, it had difficulties standardizing its operations and recruiting and training the necessary personnel. This led to tensions between Air Force personnel and civilian contractors. Similarly, finding its proper place within the Air Force's national space effort was also a challenge. By 1969, however, the AFSCF situation had stabilized, and further changes were incremental rather than dramatic in nature.

Throughout the book, Arnold carefully documents the multidimensional hurdles faced by the AFSCF: factors such as geography; weather; technology (information flow and data processing); management; and the economic, political and social influences engineers had over ideas and their transformation into a very capable satellite command and control system. Arnold also carefully analyzes the move from a system designed to win the Cold War to one to be preserved against rival organizations or bureaucratic infighting. As such, his book is a useful and essential contribution to the history of the Air Force, the national space effort, and, more precisely, the satellite reconnaissance program. It is recommended to all those interested in these aspects of history.

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Solving the 1897 Airship Mystery. By Michael Busby. Gretna, La.: Pelican Publishing Company, Inc. 2004. Maps. Photographs. Notes. Tables. Bibliography. Index. Pp. 398. $24.95 ISBN:1-58980-125-3.

In this work, Michael Busby, an engineer with extensive experience in the aviation and space industries, investigates the fascinating topic of mysterious airship sightings reported from November 1896 to May 1897. He has produced a book filled with voluminous newspaper reports from California to Michigan ostensibly corroborating these sightings. Those claiming to have seen the mysterious flying objects came from all walks of life—from sharecroppers to preachers to public officials. Mr. Busby has taken upon himself the task of determining what these purported airships really were as well as who produced and operated them. Unfortunately, he has not succeeded in solving the mystery.

The principal strength of this work, the extensive research through newspaper archives, is also its principle weakness. Busby obviously spent considerable time and effort in researching the original sources, but the reader finds himself wading through literally scores of disturbingly similar newspaper reports and interviews. This task becomes tedious in a very short time, and it is difficult to separate the various accounts and locations.

In addition, the writing style tends to be informal and often distracting, particularly when the author feels the necessity to introduce a pun or an aside. An example of this annoying habit appears on page 39 while discussing a witness named Dr. Wills: "Let us assume he was not a doctor of proctology, therefore lending greater weight to his identification of the aerial phenomenon as an airship. (Smile)" These attempts at humor detract from the content and introduce a suspicion that the entire work is something less than a serious effort.

When discussing the various explanations offered for the sightings, the author cavalierly dismisses explanations such as mass hysteria with the statement that it is "a refuge for weak minded people" or those who do shoddy research. Using stronger evidence he also dismisses other suggested solutions such as a great railroad or newspaper hoax or extraterrestrial visitation. Busby gives more credence to the theory of a secret government project and cover-up. He bases this support on his extensive experience working on secret government projects during his career. However, he fails to produce conclusive evidence of this secret government project. The suggestion that the airships were inventions of this world that had been undergoing development for a number of years appears to be his favorite solution. He postulates that those responsible for the airships were a group of inventors with considerable financial support throughout the country. Included in this group were the mysterious Hiram Wilson of New York, William H. Hart of California, William Randolph Hearst, as well as a number of others. Busby does an admirable job of genealogical research in attempting to trace the relationships between the various players in this drama. He investigates possible associations from their service in the Civil War and such things as a patent application for an airship dated Jan 28, 1896, in which a William Henry Harrison Hart is assigned one-half of the patent rights. Busby introduces notebooks dealing with the mysterious Sonora aero Club which was dedicated to "inventing and flying 'aeros' or flying machines" as early as the 1850s but then explains that the owner of these notebooks refuses all access to them preventing further examination. Busby goes on to suggest a number of possible explanations for the sudden disappearance of the airships. One is the possibility that the inventors were killed in the various crashes. Another is that the designs were bought out by the railroads. None of the possible explanations for either the disappearance or the construction and operation of these airships is adequately supported. At best, they are educated guesses.

While the research that went into this work is indeed extensive, the reader is left with few answers to the mystery. If the airships existed, the questions of who invented and flew them, what happened to them, and why they were surrounded with such secrecy remains unanswered. Given the fascinating topic, this book is

something of a disappointment.

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33 Months as a POW in Stalag Luft III: A World War II Airman Tells His Story. By Albert P. Clark. Boulder, Colo.: Fulcrum Publishing, 2004. Photographs. Maps. Bibliography. Index. Pp. xvi, 207. $17.95 Paperback ISBN 1-55591-536-1

This conversational-style book is an interesting view of one man's experiences as a German prisoner of war (POW) during World War II. Then-Lt. Col. Clark (he retired years later as a lieutenant general) was the second U.S. airman and, for many months, the highest ranking U.S. officer shot down and captured by the Luftwaffe. Though the book is less detail-oriented than the classics on the subject, Clark relates his thoughts and emotions in a no-nonsense way. He doesn't gloss over his feelings about certain other prisoners and/or some of the treatment he endured, but he also doesn't sling mud. He simply makes statements such as, "I could find no warm feelings for him when he showed up at our reunions."

Clark describes, briefly, his being a member of the first U.S. fighter group to arrive in England in 1942, his introduction to combat, and the circumstances that resulted in his shootdown and capture. Most of the book is his description of settling into life within a POW camp and his role as the senior American officer in the camp.

Stalag Luft III was the Luftwaffe-run Allied airman POW camp immortalized by the "The Great Escape" book and movie. Following a mass breakout of 76 airmen, the Nazis recaptured all but three and executed 50 of them. Clark played a leading role in the organization and operations of the POW escape machinery. Moved just prior to the escape, he missed his chance to be one of the ones who made it "out of the wire."

Clark moves back and forth in time while narrating his story. He will tell of an incident involving a German guard and then mention seeing the same man at reunions and sharing camaraderie with him years later.

The photographs are the best feature of the book. These clandestine pictures, taken at great risk by the POWs from a home-made camera, depict the bleak, monotonous existence that was POW life. Clark kept and presented a great store of POW-related material to the USAF Academy—including these photographs.

For a "big-picture" view of issues surrounding World War II European POW issues, this is not the book to read. For a touching, human voice to what it was like inside these camps, Clark did an excellent job relating his memories of his time as a "guest" of the Luftwaffe.

Lt. Col. Braxton Eisel, USAF, Washington, D.C.

The Sheriff: America's Defense of the New World Order. By Colin S. Gray. Lexington: The University Press of Kentucky, 2004. Notes. Bibliography. Index. Pp. xi, 195. $29.95 ISBN 0-8131-2315-2

Colin Gray argues forcefully that the world must be policed by a "sheriff," and that in the post-Cold War era the only nation fit to wear the badge is America. One can hardly disagree with his supporting statement that order is the prime and essential prerequisite for security; peace; and, possibly, justice. Conversely, disorder is the worst condition. He also acknowledges that the thankless task of sheriff is not entirely altruistic, and it is one of self-interest that the United States promotes a world order in which other nations should imitate America's value system. Consequently, the author embraces the global-sheriff concept because he envisions it as the mechanism for exercising America's might in support of its objectives, with or without global approval. In the final analysis, all nations would, as a consequence, benefit.

It is interesting that this book was published in the aftermath of successes in Afghanistan and the initial phase of combat in Operation Iraqi Freedom (OIF). At that moment, this country was riding a crest of optimism that it could strike its enemies at will and destroy them wherever they may be. Now, nearly three years into OIF America's optimism has been seriously eroded; and there is a sinking sense that go-it-alone policies have fostered a climate of international resentment and global isolation. One might argue that Gray could not have anticipated the rising tide of resistance to America's willingness to use force without international concurrence. The reader needs only to be reminded that there is a serious downside to the sheriff's global role. Are the lessons of Vietnam so easily forgotten? Did not the American people find themselves confused and, perhaps, angered to learn that the mission in Somalia had metamorphosed from a humanitarian effort to a failed exercise in coercive peace enforcement?

I wondered why Gray failed to mention that there have been major failures of force projection in the post-World War II era, when various nations have erroneously justified their actions as necessary for global stability. Looking beyond the Vietnam and Somalia lessons, the joint French-British experiment (with Israeli collusion) in major force projection failed at Suez not militarily but geopolitically. President Eisenhower vehemently condemned them, our NATO allies, for actually exacerbating instability in the strategic Middle East. The same observation might be gleaned from China's abortive intrusion into Vietnam, ostensibly in support of its ally, beleaguered Kampuchea. The attack on Vietnam was technically legitimate (and appeared to have U.S. encouragement) but served only to prolong regional instability. Going it alone without international endorsement may in fact precipitate, for the long term, the wrong result.

This book does not acknowledge that there are compelling arguments against a global sheriff, especially one that acts unilaterally. Gray's failure to comprehensively address those counter arguments to his thesis and rebut them seriously undermines his proposition. In support of his position, he cites the observation of Henry Kissinger that America's preponderant position rendered it the indispensable component of international stability. I could add Dr. Jeffery Record's observation (in *Making War, Thinking History*): "If you wish to claim world leadership then you need to use your strength for more than just self-protection. In neither case is there an unimpeachable imperative to abandon collective action within the family of nations."

Perhaps the best argument for multilateralism is the ongoing global war on terrorism. The US could not have fought this war as the "lone ranger." Nations that did not endorse America's war in Iraq are nevertheless fully committed to defeating terrorism by synergistically contributing intelligence and resources and committing themselves to winning the war.

Succinctly, this 195-page book is neither sufficiently comprehensive nor adequately intellectual to make a convincing argument in support of a premise that essentially sweeps aside the founding principles of the United Nations and the collective lessons of the bloody 20th century. It is not that Gray is incorrect when he argues that America has a leading role

to play in maintaining global stability. He may have missed the point, however, by not recognizing that stability arises from collective wisdom and global commitment to the ideal. A superpower imposing global "stability" may actually be acting in a fundamentally contradictory fashion.

This book, in light of its brevity, reaches too far beyond its central thesis. Throughout, there are frequent digressions and elongated discussions of the United States' military role in the sheriff mission and desirable military competencies as Gray envisions them. He is also critical of America's national strategy or, more accurately, the lack of an effective one, He sees the military dominated by "technophiles" but seriously lacking in strategic thinkers. This is not to imply that Gray does not raise important issues and make valid points. However, he must first validate his fundamental thesis before arguing about the nature of the tools.

Read this book, if for no other reason than its perspective. In the middle of the war on terrorism and OIF this nation is at a critical juncture where it is compelled to reassess its global role. Can America really be the sheriff when the posse doesn't want to ride behind the self-elected lawman?

Col. John L. Cirafici, USAF (Ret.)

Warriors and Scholars: A Modern War Reader. By Peter B. Lane and Ronald E. Marcello, eds. Denton: University of Texas Press, 2005. Maps. Notes. Index. Pp. vi, 288. $24.95 ISBN: 1-57441-197-7

This is a cross-section of papers from twenty-two annual Military History Seminars conducted by the Department of History at the University of North Texas. This campus is trying to make military history one of its areas of excellence. The book is a collection of papers that concentrate on World War II and subsequent events. The seven sections start with that war, then the early Cold War, Korea, Vietnam, the late Cold War, and terrorism. The thirteen contributors range from acknowledged experts on the subject to participants. Each section leads off with an introduction to that period written by the editors. The introduction's intended purpose is to provide context for what follows. Each contribution is then preceded by a biography of the speaker. There are five useful and readable maps, but more would have been helpful.

The front cover states that this should be of great use to the professional and the student. This, however, greatly depends on the interests and background of the reader. I found all of the accounts entertaining but found something significantly new in only a few. Personal accounts of the "I was there" variety add color, but little else, to history. Teachers might be able to work this into their assigned background reading, but I'm not sure where else it would be useful. However, there does seem to be a market somewhere for papers from conferences and seminars.

Brig. Gen. Curtis Hooper O'Sullivan, ANG (Ret.), Salida, California

Amy Johnson: Enigma in the Sky. By David Luff. Shrewsbury, England: Airlife Publishing Ltd, 2002. Maps, Photographs. Notes. Bibliography. Index. Pp. viii, 368. $24.95 ISBN: 1-84307-319-9

David Luff has created much more than another biography of a famous aviator. He invites us to experience the Golden Age of Aviation through the life and experiences of an exceptional young woman. This is a well-researched work written by a respected author. He has not only written other books on the Golden Age, but also served as an advisor for a television documentary about Amy Johnson. In this portrayal Luff avoids the pitfall of hero (or heroine) worship. He creates a portrait of a vibrant, intense, yet insecure, young woman who was not the most proficient pilot in a technical sense but overcame every obstacle and became an international idol.

Luff opens with a description of Johnson's early years. The first quarter of the book deals primarily with her relationship with her lover Hans Arregger, a Swiss businessman. Much of the information to which Mr. Luff refers originates in Amy's letters to Arregger. Unfortunately, these letters present only one side of this tempestuous relationship, as his letters are not extant. While this period of Johnson's life is certainly pivotal and provides a degree of insight into her future actions, it is overly detailed. The reader is forced to persevere through a seemingly never-ending litany of romantic trials and tribulations. It was only after this relationship ended that Johnson seriously began flying.

The flying did not proceed smoothly. Her first flight instructor attempted to dissuade her from continuing, telling her that she would never make it. In spite of this criticism, she not only completed her flight training but also received her mechanic ratings. From that point on she single-mindedly set out to establish herself in the aviation profession. This was a major challenge, as aviation was virtually dominated by men, many of whom resented her accomplishments. She persevered and won the promise of support from a wealthy philanthropist which allowed her to complete a solo flight from England to Australia. This success established her reputation. Skillful use of sponsors, the press, public appearances, and her marriage to the "playboy pilot" Jim Mollison kept her in the public eye, ensuring continuing financial support. The Mollisons became the most famous aviation couple in the world. However, in what Luff likens to a Greek tragedy, Amy's personal life once again deteriorated, and the marriage ended in divorce.

The author attempts to unravel the mystery of Amy Johnson's untimely death on January 5, 1941. Numerous theories concerning her death persist. Luff makes a valiant attempt to disprove many of the theories and suggests that she was shot down by friendly fire. While this may indeed be what happened, the evidence is inconclusive. The mystery of her death remains, and the insinuation that the British admiralty was not forthcoming with details is more fodder for conspiracy theorists than evidence for historians.

This work contributes to the literature but has significant weaknesses. In addition to the overly protracted initial section, the most glaring weakness is the author's repeated attempts to use a type of psychological history to explain events. The danger with this type of analysis is that it raises more questions than it answers. It is difficult to use psychoanalysis seventy years after events took place.

Perhaps the strongest contribution of the book is its portrayal of aviation during the Golden Age, including a number of well integrated photographs. The reader is introduced to many major players of the era including Amelia Earhart, Jim Mollison, and Beryl Markham. We also are privileged to experience the day-to-day interaction between pilots struggling to maintain positions of prominence in a competitive era. In an interesting aside, we hear Amy Johnson lament upon the deplorable state of British aviation technology compared to that of the United States. While serving a 48-hour stint as a copilot for TWA, she inspected the DC-1 at the Douglas plant in Santa Monica and became convinced that British aviation was light years behind the U.S. She compared the modern airliners of Douglas

Leon Bennett explores the combat sequences, the arts of aerial gunnery, and the weapons and planes used by the World War I fighter pilots. He gives the lowdown on why it was so hard to score a hit and what qualities helped the aces succeed. Bennett uses his detailed insight into the mechanics of air warfare to search for the answer to the enduring controversy of what finally brought the Red Baron down.
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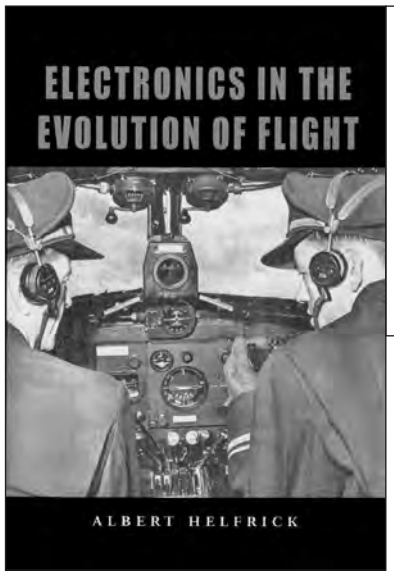

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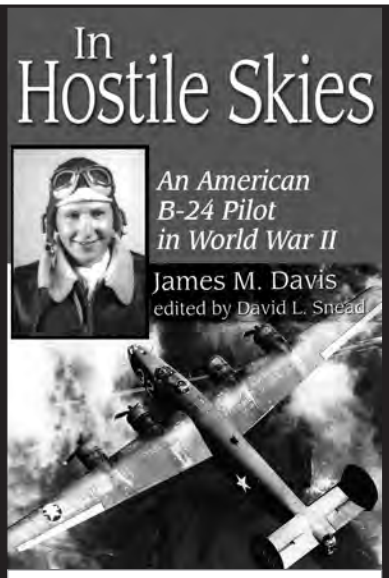

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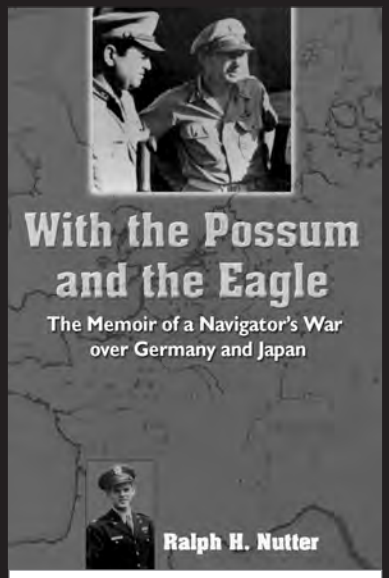

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and Boeing to her fabric covered de Havilland Dragon. She also found the system of scheduled air transportation in the United States far superior to that in Europe.

There are other books written about Amy Johnson and numerous books dealing with the 1930s. However, this work is significant in that it provides the reader with an intimate portrait of the struggles of a young woman determined to be successful in a challenging field. It introduces us to a woman with the same problems experienced by other young women, the heartbreaks and the frustrations of being a woman in Edwardian society. The fact that Amy Johnson overcame so many obstacles is itself inspiring, and Luff's masterful presentation does justice to a remarkable young woman in a remarkable age. A must read for aviation aficionados.

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The First Team: Pacific Navy Air Combat from Pearl Harbor to Midway. By John B. Lundstrom. Annapolis, Md.: Naval Institute Press, 2005 [copyright 1984]. Maps. Tables. Diagrams. Illustrations. Photographs. Notes. Appendices. Glossary. Bibliography. Index. Pp. xiii, 547. $28.95 Paperback ISBN: 1-59114-471-X and **The First Team and the Guadalcanal Campaign: Naval Fighter Combat from August to November 1942.** By John B. Lundstrom. Annapolis, Md.: Naval Institute Press, 1994. Maps. Tables. Diagrams. Illustrations. Photographs. Notes. Appendices. Glossary. Bibliography. Index. Pp. xx, 626. $28.95 Paperback ISBN: 1-59114-472-8

John Lundstrom has written a pair of great naval aviation historical publications. The first of these is a detailed operational history of carrier warfare through the Battle of Midway. It speaks to the great combat records of our ace pilots against some pretty tough odds. Not only does the author delve into history from the American side but also from Japanese sources as well. His interviews with airmen on both sides allow new details of some of the many aerial and sea battles to be written.

For the period of deteriorating relations in the Pacific in late 1941, Lundstrom covers the Pacific Fleet and its personnel and aircraft in considerable detail. At 0755 on December 7, 1941, a day that would go down in infamy, the Japanese attacked Pearl Harbor, Lundstrom vividly describes not only the attack but also the US response and much of the confusion and mayhem that went along with it.

Admiral Kimmel's first concern following the attack was to protect Hawaii. Lundstrom goes to great length detailing the start of the push against the Japanese. The reliance of the Navy on its Pacific carriers—Lexington, Yorktown, Enterprise, and Saratoga—is stressed. Wake Island was to be first major battle under the command of Admiral Frank Jack Fletcher's Task Force 14, a force that included Saratoga. D-Day for Wake Island was scheduled for December 24, 1941. However, much to the dismay of all hands and due to an overwhelming Japanese force, the operation was canceled and the fleet recalled. Wake fell to the Japanese.

The early days of our Navy's Pacific war were not running smoothly at all. Due to severe torpedo damage to Saratoga, she returned to the mainland for repairs. On January 23, 1942, the Imperial Submarine I-72 sank an oiler working with Task Force 11. Admiral Nimitz recalled the force to Pearl. As yet, the first Pacific Fleet counterattack against the Japanese had not happened.

But at 0704 on February 1, 1942, Lt (jg) Wilmer E. Bawe scored the first victory of the war by a fighter pilot of the US Navy. Slowly but surely, the fleet became more active in actions taken in the Pacific. Freak accidents continued to plague aircrews, but additional aircraft and pilots were arriving in the theater.

Operations moved to places like Bougainville, the Marcus Islands, and Wake—actions which led up to the Battles of the Coral Sea and Midway. These proved to be the first real tests of naval carrier doctrine. The Imperial Navy's superb air arm—which consisted of not only carrier aircraft but a strong land-based air contingent including excellent medium bombers—suffered tremendous losses at both of the major battles in the first half of 1942.

In the second book, Lundstrom continues the story of the developing Pacific war with the Guadalcanal campaign. He provides in-depth facts and figures about the ships involved, types of aircraft, and aircrews. He also looks at the questionable training pilots had received before being blooded in combat.

On August 7, 1942, the carriers Saratoga, Wasp, and Enterprise spearheaded the first allied amphibious assault of the Pacific war. Of 237 airplanes on hand, 234 of them hit Tulagi and Guadalcanal in the Solomon Islands. The air battle around Guadalcanal was vicious for months, and the talent and experience on both sides were put to the test. When it was over, US Navy fighters had suffered a 50 percent loss. Aviation professionals pointed to such reasons as poor initial positioning. Fighter pilots discussed the functioning of ammunition and guns. As good an aircraft as Grumman's F4F Wildcat was, pilots wanted something better and faster; they would have to wait another year for the far superior Hellcat to arrive. But, fighting with what they had, the Americans achieved overall victory in the southern Solomons.

Both of these books are outstanding for the individual who considers himself or herself an in-depth military historian. The detail is truly amazing and covers the battles, aircrews, squadrons, aircraft and weaponry, and training programs. They are definitely not books that one picks up and reads from cover to cover in a single reading. I found the best approach was to read a few pages and then put them aside and digest the material.

These books are truly a fine dedication to the Navy spirit and also a true picture of the early-war carrier aviators who were, indeed, the first team.

Stu Tobias, Indianapolis, Indiana.

Flash Point North Korea: The Pueblo and EC–121 Crises. By Richard A. Mobley. Annapolis Md.: Naval Institute Press, 2003. Maps. Tables. Photographs. Notes. Bibliography. Index. Pp. xii, 216. $29.95 ISBN 1-55750-403-2

Air Power History readers probably recall the basic facts of the incidents involving the *USS Pueblo* and the EC–121. In January 1968, the *Pueblo*, a signals intelligence vessel, was seized in international waters by North Korea while on its initial collection mission. One sailor was killed during the attack, and the North held the 82 survivors for nearly a year, not releasing them until December. Then, in April 1969, North Korean MiGs shot down an EC–121 aircraft performing a similar intelligence-gathering mission. The EC–121, a military version of the Lockheed Constellation, carried a crew of 31 sailors and Marines, all of whom were killed. *Flash Point North Korea* tells the story of why these intelligence missions were conducted and of the aftermath of North Korea's attacks.

Richard Mobley is a retired Navy intelligence officer with extensive experi-

ence in the western Pacific, where his assignments included a posting in the 1990s as an intelligence analyst for US Forces Korea. Adding to the experience he gained in those assignments, he has researched a wealth of recently declassified material and is thus able to provide unique insights into the *Pueblo* and EC–121 incidents. While much has been written about what happened during the incidents, Mobley's goal was to delve deeper and explain how and why these events transpired.

In the mid-1960s, North Korea presented one of the more difficult challenges for U.S. decision-makers. The North possessed significant military capability and, from 1965 to early 1968, had demonstrated an increasing willingness to use its forces against South Korea. During this period the North provoked hundreds of violent incidents in the demilitarized zone separating the two Koreas, conducted incursions into the South, and even staged a 31-man attack in Seoul in an attempt to assassinate the South Korean president.

Faced with this situation, the U.S. needed timely, reliable answers to the critical questions concerning North Korea's capabilities and intentions. Unfortunately, the answers to these questions were not easy to obtain. As Mobley notes, "the ability of U.S. intelligence analysts to discern [North Korea's] next moves was obscured by the secrecy that pervaded the remote regime, and outsiders' ability to detect many of its preparations for limited war was questionable. The United States clearly needed more intelligence … The United States Navy prepared to respond to that need both at sea and in the air."

Mobley begins his analysis by dealing with the incidents separately, addressing the same questions for each of them: What process was used to assess the risk of the proposed mission? Based on what was known at the time, was the risk assessment appropriate? Should the *Pueblo* and the EC–121 been given greater protection? Could provisions have been made to warn them more quickly of imminent danger? Following the incident, how did the US respond politically and militarily? What factors limited the range of available responses?

Not surprisingly, the answers to some of these questions do not paint a very positive picture of U.S. decision-making processes. Yes, these missions (and similar missions being conducted during the same timeframe) were probably more risky than was acknowledged. And yes, more could have been done to protect them. But with his careful and thorough telling of the story, Mobley helps the reader understand the serious nature of the perceived threat from North Korea and, thus, to appreciate the context in which decisions were made. In his final chapters, he identifies both the immediate lessons learned and the big-picture conclusions that can be drawn from the incidents. For those who want to go behind the basic facts and understand the "why" behind the *Pueblo* and EC–121 incidents, this well-written, well-researched book is highly recommended.

Lt. Col. Joseph Romito, USA (Ret); Docent, National Air and Space Museum

The Cambridge History of Warfare. By Geoffrey Parker, ed. UK: Cambridge University Press, 2005. Maps. Notes. Appendices. Glossary. Bibliography. Index. Pp. viii, 515. $22.99 paperback, ISBN: 0-521-61895-9

The title of this work should properly have included "in the West." Parker admits as much in the preface, The story tells of the development of warfare in the West from the Classical Greeks to the present and attempts to show a continuity of military theory. The book certainly meets the high standards of the Cambridge Press. Parker participated in the preparation of six of the nineteen sections; Williamson A. Murray also six; Victor David Hanson three; and four other perhaps less known but also competent authors the remaining four.

It is true that the Western "way" of warfare was eventually extended throughout the world and that "ways" that flourished before did not survive and did not leave much of a mark.

This is a compact, handy reference. The authors summarize material without a "Reader's Digest" over-simplification. They pick salient facts that illustrate their points and avoid the non-relevant. For example, Gettysburg—about which hundreds of books have been written—is described in half a page. The chronology and glossary are useful, though the latter has some odd inclusions and omissions. The maps—indispensable in a work such as this—are disappointing in that dark backgrounds make place names difficult to read.

The development of technology is interwoven throughout the book. Weapons and transportation get good coverage. Less thorough is coverage of the explosion in methods of C3 (command, control, and communications); within a lifetime, the battlefield has been substantially transformed. The revolution, of course, goes beyond that. For example, the White House Situation Room can talk directly with combat leaders—which may not always be good.

This a thought-provoking, enjoyable book to read and a good one to have on hand for reference.

Brig. Gen. Curtis Hooper O'Sullivan, ANG (Ret.), Salida, Callifornia

Shattered Sword: The Untold Story of the Battle of Midway. By Jonathan Parshall and Anthony Tully. Dulles, Va.: Potomac Books, 2005. Maps. Diagrams. Photographs. Appendices. Notes. Bibliography. Index. Pp. 613. $35.00, ISBN: 1-57488-923-0

Jonathan Parshall and Anthony Tully have written extensively on naval history and the Imperial Japanese Navy in particular. *Shattered Sword* is their detailed history of the famous June 1942 confrontation between the Japanese and American fleets, focusing on the Japanese experience. Using many untapped primary Japanese sources, the authors provide a fresh interpretation of the planning, execution, and results of the Battle of Midway, overturning much of the conventional wisdom surrounding the battle.

Midway was one of the pivotal battles of World War II, marking the end of Japan's string of victories following the December 7, 1941, attack on Pearl Harbor. *Shattered Sword* first examines the genesis of Admiral Yamamoto's plan to occupy Midway and the western Aleutian Islands, hopefully leading to a climactic battle with, and destruction of, the US Pacific Fleet. Unlike previous authors, Parshall and Tully analyze the Japanese plan from the perspective of Japan's naval technology, doctrine, and experience stretching back to the defeat of the Russian fleet at the 1905 Battle of Tsushima. The central tenet of offensive action leading to a decisive battle underpinned Japanese naval strategy during the early months of World War II. The authors also point out distinct differences in Japanese aircraft carrier operations as compared to those of America, differences that figured significantly in the events of June 4, 1942.

After following the Japanese departure from home waters and transit to Midway, *Shattered Sword* focuses on the *Akagi*, *Kaga*, *Soryu*, and *Hiryu*, the four aircraft carriers of "Kido Butai," the First Mobile Striking Force forming the offen-

sive core of Japan's fleet. Commanded by Admiral Nagumo, "Kido Butai" planned to attack Midway and then destroy any elements of the U.S. Pacific Fleet that tried to intervene. The Pacific Fleet commander, Admiral Nimitz, surprised the Japanese as a result of the earlier breaking of Japanese naval codes. By dusk of June 4 all four Japanese aircraft carriers had been sunk or abandoned. The authors closely examine Japanese decisions and operations during the day, linking the destruction of "Kido Butai" to their earlier discussion of Japanese technology and doctrine. In the process, they overturn many of the common myths associated with the battle, including: 1) the Aleutians operation was a diversion to lure the Americans into battle; 2) American dive bombers struck just as the Japanese were preparing to launch a counterstrike against the American fleet; and 3) the Americans won against overwhelming odds.

Shattered Sword is a must for any student of World War II history interested in the naval conflict in the Pacific. With superb appendices (including a detailed order of battle, specifications on each "Kido Butai" aircraft carrier, and a chronology of Japanese fighter operations), the book will be the standard work on the Battle of Midway for years to come. Parshall and Tully's original approach demonstrates how much can still be revealed about World War II even after 60 years of research and writing.

Maj. Jeffrey P. Joyce, USAF (Ret.),
Docent, National Air and Space
Museum's Udvar-Hazy Center

Savage Wilderness: The Epic Outback Search for the Crew of Little Eva—The Ultimate World War II Survivor Story. By Barry Ralph. St. Lucia, Queensland: University of Queensland Press, 2004. Maps. Illustrations. Photographs. Sources. Index. Pp. xii, 209. $32.95 Paperback ISBN: 0-7022-3443-5.

Barry Ralph is an historian and broadcaster who has published an earlier book on the experiences of American servicemen in World War II Australia. His latest book tells the harrowing story of the crew of the B–24 Liberator *Little Eva*, lost in the Australian wilderness following a December 1942 mission against a Japanese convoy near New Guinea.

Ralph opens the story by putting the mission of *Little Eva* into historical context. He discusses the origin of the U.S. Army Air Force, the development of the B–24, the establishment of the 90th Bomb Group (to which *Little Eva* belonged), and the early days of World War II in the Pacific. Unfortunately, this section is marred by numerous factual errors. For example, Mr. Ralph incorrectly states that General Billy Mitchell was "promptly court-martialed" after bombing two American battleships off the Atlantic Coast in 1921. In fact, his court-martial came in 1925 after he publicly criticized the military establishment. Also, he frequently confuses and misuses the terms Army Air Corps and Army Air Force. It appears the author based much of this section on sometimes inaccurate or inconsistent secondary sources.

The book then follows the crew of *Little Eva* on their first (and only) combat mission from their base in northeastern Australia (Queensland). Because of a series of misfortunes and mistakes, *Little Eva* becomes lost while returning to base, forcing the crew to bail out over the northern wilderness of Australia. Fully two-thirds of this book chronicles the ordeal of the crew and the American and Australian attempts to locate the missing B–24. Ralph is at his best in describing the people and culture of this isolated region of Australia, bringing to life the ranchers, policemen, and native Aboriginals who participated in the search. He also paints a riveting picture of the constant struggle with weather, terrain, and animals faced by *Little Eva*'s crew and their would-be rescuers.

Savage Wilderness would have benefited from more careful research and editing in the first two chapters. For readers willing to overlook this problem, the remainder of the book is a fascinating and often gripping account of a true survivor story during World War II.

Maj. Jeffrey P. Joyce, USAF (Ret.),
Docent, National Air and Space
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The Unknown Dead: Civilians in the Battle of the Bulge. By Peter Schrijvers. Lexington: The University Press of Kentucky, 2005. Maps. Photographs. Notes. Bibliography. Index. Pp. xviii, 430. $35.00 ISBN: 0-8131-2352-6

Over the past sixty years, scholars have written extensively in English, French, and German about the Battle of the Bulge, 1944-1945. Comprehensive studies in English include *The Ardennes* (1965) by Hugh M. Cole, *Hitler's Last Gamble* (1994) by Trevor N. Dupuy, *The Bitter Woods* (1995) by John S.D. Eisenhower, *A Time for Trumpets* (1984) by Charles B. MacDonald, and *Battle* (1959) by John Toland. *To Win the Winter Sky* (1994) by Danny S. Parker examines the role of airpower. Given that it was the largest land battle of World War II in which the United States participated, numerous volumes, articles, and unpublished papers focus more narrowly on specific locations or units in the Battle of the Bulge. Until publication last year of this work, however, no historian thoroughly narrated the impact of this ferocious military engagement on civilians in Belgium and Luxembourg.

Belgian-born Schrijvers perused dozens of secondary sources, including most of those previously mentioned, and culled details from primary materials written in three different languages. He found the latter sources filed in four central archives in Brussels and two local collections, printed in books and magazines, or posted on the World Wide Web. In addition, he personally visited Belgian families and individuals who shared quite frankly their stories of fear and suffering during the Battle of the Bulge. From these various references, Schrijvers compiled noncombatants' harrowing stories of life and death under heavy artillery barrages, German aerial attacks, and massive bombings by Allied air forces. Even more horrifying are the vivid accounts of war crimes committed by German military units and Nazi security services as they reoccupied territory vacated by the retreating Allies.

The approximately 3000 civilians killed might have suffered less than the tens of thousands who endured and survived the six weeks of the Battle of the Bulge. Diseases such as typhus, dysentery, meningitis, paratyphoid, pneumonia, diphtheria, croup, scabies, and cholera were common among the survivors, especially the young and old, who huddled in damp, dark cellars and caves. Leaving such shelters to care for cattle, pigs, or horses or to seek food and water endangered one's life. Soldiers on both sides distrusted noncombatants and often mistreated them. As *The Unknown Dead* reveals, military forces on both sides gathered bricks from damaged homes to pave roads, confiscated furniture for firewood, and slaughtered livestock for food. German troops rudely forced civilians to labor on clearing roads, rebuilding bridges, and digging trenches. With mind-numbing, heart-wrenching repetition, Schrijvers records how death and destruction visited farms, villages, and towns across the entire battlefield. Amidst the appalling callousness of war, however, he

found remarkable examples of individual German and Allied soldiers' compassion for the plight of civilians.

According to Schrijvers, civilians feared attacks from the air more than gunfire, landmines, or artillery. He describes how a series of bomb blasts catapulted a farm girl through a window, propelled her brother from the stable onto a manure pile yards away, returned him to the stable, and left no trace of the farm's owner. Napalm dropped on the village of Cobru, just north of Bastogne, killed six people in one house and left nine others severely burned on Christmas Eve. Meanwhile, German Junkers 88s assaulted Bastogne, leaving residents' nerves shattered and homes destroyed. Another napalm attack by Allied planes on Christmas Day set ablaze half the buildings in Rouette and incinerated all the livestock. From beginning to end, readers of *The Unknown Dead* will ceaselessly confront similarly terrifying tales. Not recommended for the faint hearted or easily disturbed, this book nevertheless conveys with incredible thoroughness and accuracy the suffering of civilians caught in the path of war.

Dr. Rick W. Sturdevant, Deputy Command Historian, HQ Air Force Space Command, Peterson AFB, Colorado

Air War for Burma: The Allied Air Forces Fight Back in South-East Asia 1942-1945. By Christopher Shores. London: Grubb Street, 2005. Maps. Tables. Diagrams. Illustrations. Photographs. Notes. Appendices. Bibliography. Index. Pp. 448. $59.95 ISBN: 1-90401095-4

After serving in the RAF, Chris Shores wrote numerous books on aviation subjects. This is his third, and concluding, volume on the war in Burma during World War II. In it, he covers how the Allied air forces fought back in South-East Asia in 1942-1945. He includes the First and Second Arakan Campaigns, support of the Chindits; the sieges of Imphal and Kohima, and the final advance to Mandalay and Rangoon.

Shores initially sets the scene by briefly describing the events leading up to this account. Thenceforth, he gives a day-by-day chronology of the air war in India, Burma, and over the Indian Ocean from June 1942 to August 1945. There may be too much detail for most readers, but tucked away in these daily reports are some gems of information. There is an introduction and conclusions, and every month has a general overview, but this does not give a cohesive history of the air war in Burma. Rather, this is a report of a series of engagements and events and not the definitive story.

Shores is to be complimented on his detailed research. The most impressive thing is his incorporation of Japanese sources into the daily accounts. There are about 200 photographs of everything from sitting, flying, and crashed planes to shots of individuals and groups. The enemy may not have equal representation, but it gets far more than you'd expect. The same level of detail is true in the Orders of Battle which comprise the twelve appendices.

Scattered throughout the chronology are boxes summarizing air battles. These include the usual optimistic claims of kills and damage. Hope rises high in the heat of combat, and there is always some degree of wishful thinking. It is extremely difficult to tell what actually happens in a fast-moving situation, and a tendency is to give yourself the benefit of the doubt. When possible, Shores has added actual losses as recorded after thorough investigation.

There are five excellent maps showing the location of places addressed in the book. They don't attempt to show troops or their movement. The USAAF in the CBI is not neglected, but the author acknowledges that he has less information about their operations.

One thing not included is much information about support elements. Air forces don't fly without support from a tremendous infrastructure and a long logistical train. These are necessary to provide and maintain the planes and to take care of the fliers.

This could be a useful reference work for anyone wanting this type and amount of detail.

Brig. Gen. Curtis Hooper O'Sullivan, ANG (Ret.), Salida, California.

They Sailed the Skies: U.S. Navy Balloons and the Airship Program. By J. Gordon Vaeth. Annapolis, Md.: Naval Institute Press, 2005. Photographs. Bibliography. Index. Pp. 159. $34.95 ISBN: 1-59114-914-2

Lt. J. Gordon Vaeth, USNR (Ret), was an intelligence officer with the Navy's lighter-than-air program during World War II. His book chronicles the Navy's involvement with manned balloons and airships from World War I through the final stratospheric flights of the early 1960s. Much has been written about the rigid airships of the 1920s and 1930s (the two most famous are the *USS Akron* and *USS Macon*), but other aspects of the Navy's program are often overlooked.

Vaeth fills this void by also examining the Navy's involvement in balloon racing and how blimps helped defeat German U-boats and patrol the coasts of the United States during World War II.

The Navy's first airship, DN-1 (Dirigible, Navy, #1) flew in April 1917 and paved the way for a series of blimps that flew antisubmarine missions during the First World War. A note on terms: "blimp" is popularly used for a non-rigid (i.e., lacking an internal framework) pressure-type airship. The nickname (attributed to the British) supposedly described the sound made by flicking one's thumb against the taut, gas-filled airship bag. A rigid airship (or "dirigible") has an internal framework as exemplified by the German airships *Graf Zeppelin* and *Hindenberg*.

Following World War I the Navy participated in the popular James Gordon Bennett International Balloon Races while establishing a rigid airship program with the construction of ZR-1 (Lighter-than-Air, Rigid, #1), christened the *USS Shenandoah* in 1923. The Navy was interested in the potential of rigid airships after witnessing the endurance and range of German Zeppelins used to bomb England during World War I. Vaeth also introduces the reader to several important Navy figures in the lighter-than-air program, including his friend Thomas "Tex" Settle, the leading Navy balloonist of the period.

The heyday of the Navy's airship program ended with the loss of both the *USS Akron* and *USS Macon* in the 1930s. However, the Navy's lighter-than-air program continued with blimps and balloons. Continuing through World War II, the book examines the role of blimps during the early Cold War and the Navy's final high-altitude research flights that ended in 1962.

They Sailed The Skies is a concise and enjoyable history of the U.S. Navy's lighter-than-air program. The only real criticism is that the $34.95 price seems a bit steep for a relatively slim volume.

Maj. Jeffrey P. Joyce, USAF (Ret.), Docent, National Air and Space Museum's Udvar-Hazy Center

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Dr. Space: The Life of Wernher von Braun. By Bob Ward. Annapolis Md.: Naval Institute Press, 2005. Photographs. Notes. Appendices. Bibliography. Index. Pp. xiii, 282. $29.95. ISBN: 1-59114-926-6

One might ask, "Why another book about Wernher von Braun?" Long before the end of von Braun's illustrious career, Erik Bergaust wrote *Reaching for the Stars: A Biography of the Great Pioneer in Space Exploration, Wernher von Braun* (1960) and, quite recently, Dennis Piszkiewicz completed *Wernher von Braun: The Man Who Sold the Moon* (1998). Ernst Stuhlinger and Frederick Ordway III glorified him in their two-volume study *Wernher von Braun: Crusader for Space* (1994), and Michael Neufeld vilified him in *The Rocket and the Reich* (1995). As with practically every famous person throughout history, von Braun's character and career remain open perennially to reinterpretation.

While von Braun's exceptional scientific, engineering, and organizational leadership contributions to rocketry and spaceflight are well known, the nuances of his personal life are less familiar to most people. With respect to the latter, *Dr. Space* offers a fairly balanced portrait of a brilliant individual whose intellectual interests extended far beyond things related to space. As astronaut John Glenn recalls in the book's foreword, von Braun's personal library contained many volumes on religion, philosophy, geography, geology, politics, government, and a whole realm of non-engineering topics. A voracious reader and talented conversationalist with fluency in several languages, an accomplished pianist and cello player, an experienced aviator, and an avid scuba diver, von Braun displayed limitless curiosity. On a morally lower plane, he enjoyed drinking whiskey, occasionally visiting a strip club, and exchanging risqué jokes with friends late into the night.

Ward, as a reporter for the *Huntsville* (Alabama) *Times* and later as a correspondent for national technical and trade publications, covered von Braun's activities from 1957 to his death in 1977. In 1998, Ward began extracting information from his workaday acquaintance with von Braun, numerous interviews, extensive correspondence, archival research, and secondary literature to compile a more thorough description of the "total man" than what von Braun's unabashed admirers or acknowledged detractors had conveyed. Although *Dr. Space* is only half the length of Ward's original manuscript, it successfully narrows the divide between von Braun's cheering section and the opposing side. While far from faultless, Ward's portrait of von Braun shows a human being with almost unbounded drive to succeed at almost any price; with strong compassion for, and loyalty to, other members of his team; and with deep spiritual convictions.

Although Ward strives for balance and comprehensiveness in assessing von Braun, he falls short in significant ways. First, he aims for an objective analysis of unquestionably the most controversial aspect of von Braun's professional and personal life: his involvement with the SS and with slave labor in Nazi Germany. Unfortunately, Ward's treatment of the subject will leave skeptical readers unconvinced that von Braun's apolitical orientation adequately excuses him from responsibility for the horrible deaths of countless people in the underground Mittlewerk V-2 production factory. The author's objectivity also wanes when he narrates von Braun's life after leaving Marshall Space Flight Center in early 1970. The account of how others at NASA headquarters unsympathetically maneuvered a humiliated von Braun into a position of relative powerlessness and the description of how cancer ultimately destroyed the great man pluck readers' heartstrings and place Ward, wittingly or otherwise, squarely in the admirers' camp.

Both its strengths and weaknesses render *Dr. Space* a worthwhile book about a fascinating, historically important person. This biography includes little-known or new details, affords unique insights, and raises intriguing questions about von Braun and his times. It also offers a perfect example of why future scholars will revisit the man.

Dr. Rick W. Sturdevant, Deputy Command Historian, HQ Air Force Space Command, Peterson AFB, Colorado.

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Sabres over MiG Alley: The F-86 and the Battle for Air Superiority in Korea. By Kenneth P. Werrell. Annapolis Md.: Naval Institute Press, 2005. Map. Photographs. Bibliography. Notes. Index. Pp. x, 318. $29.95 ISBN: 1-59114-933-9

This one is a crowd pleaser. Ken Werrell, a highly respected air power historian, has turned his attention towards one of the more glorious chapters in Air Force history. The battle for air superiority over Korea was a great success story for both the American fighter pilots who flew in "MiG Alley" and the remarkable airplane that bore them there.

The North American F–86 "Sabre" was conceived during World War II but did not fly until late 1947. Originally designed as a straight-wing fighter sporting a jet engine, the influx of captured German aeronautical data at the end of the war suggested that a swept-wing design would be more successful. It most certainly was.

The F–86, an air superiority fighter, was deployed initially to Europe to counter the Soviet threat. However, the appearance of Soviet-built jet fighters

over North Korea in November 1950 forced a reassessment.

The MiG–15, another swept-wing fighter that first flew in 1947, was an unpleasant surprise both to American intelligence experts and USAF fighter pilots. Small, light, agile and heavily armed, the MiG–15 was roughly equal to the F–86 in performance. Pilots of both planes would acknowledge that the MiG was slightly faster and had better climb characteristics, but the Sabre could turn tighter, especially at low to mid altitudes. The Soviet fighter was better armed—its cannon was more effective and powerful than the .50 caliber machine guns on the Sabre. On the other hand, Werrell notes that the "auxiliary equipment" on the American jet—the gunsight, g-suit, helmet and cockpit defroster—were distinct advantages. Despite their roughly comparable performance, the kill ratio of the F–86 over the MiG exceeded 8-to-1 over the course of the war and was 13-to-1 during the final year.

What accounted for this remarkable superiority? Werrell attributes Sabre success to the excellence of its pilots. The USAF fighter pilots who went to war in Korea were an unusually experienced and well-trained group. In fact, the average F–86 ace was around 30 years old—an old man by fighter-pilot standards. Many of these men had flown in World War II and had thousands of hours in the air. In addition, these pilots—at least the most successful ones—had an unusual and undiluted aggressiveness and self-confidence. Their job was to hunt: to find MiGs wherever they were located and to shoot them down.

This last comment is relevant, and Werrell notes that despite official policy and public statements at the time, F–86 pilots routinely crossed over the Yalu River into Chinese airspace to find their quarry. Almost without exception, these incursions were well known to Air Force superiors who condoned and in some cases encouraged such behavior. Indeed, several American aces seem to have scored most of their victories in prohibited airspace.

Werrell also notes some of the other less publicized aspects of the air war over North Korea: the problems of fratricide, "reluctant warriors" who seldom sought combat, and exaggerated victory claims. In addition, some chapters focus on the stories of well-known American aces. Although most of these are positive depictions, he notes that some of these men were self-serving glory hounds who inspired little friendship or respect among their colleagues. The numerous "there I was" stories presented are both candid and entertaining.

Despite the glitz and glamour surrounding this air campaign, the combat story of the F–86 and its pilots is a deadly serious one. The achievement of air superiority, indeed, air *supremacy* over the entire Korean peninsula was of enormous importance. Throughout the war the communists attempted to build airfields in North Korea from which to launch airstrikes against United Nations positions and troops. These airfields were repeatedly bombed and strafed and never became operational. Enemy aircraft seldom strayed south and played no significant role in the war—they were never allowed to get that close. American air dominance, largely granted by the F–86 and its pilots, was a decisive factor in UN success.

Regrettably, this story of the USAF efforts in MiG Alley remains largely one-dimensional. Werrell states that the Soviets flew most of the MiG sorties over North Korea, but Soviet sources detailing that involvement are scanty and unreliable—the Soviets claimed, for example, nearly eight times the number of air victories than aircraft actually lost by the U.S. Chinese sources are even less illuminating. Somewhat surprisingly, Werrell does not mention John Boyd and his theory of "fast transient maneuvers" (which evolved into his famous OODA Loop) that sought to explain F–86 success as being more attributable to technological factors than pilot prowess.

Even so, this is an excellent and enjoyable book that puts a personal face on the decisive air battles over Korea in what has often been labeled America's "forgotten war."

Col. Phillip S. Meilinger, USAF (Ret.), Northrop Grumman Corporation

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*Christensen, Charles R. *A History of the Development of Technical Intelligence in the Air Force, 1917-1947.* Lewiston, N.Y.: The Edwin Meller Press, 2002. [415 Ridge St., Lewiston, NY 14092] Notes. Bibliography. Index. Pp. x, 228. $39.95 ISBN: 0-7734-6965-6

Daugherty, William J. *Executive Secrets: Covert Actions & the Presidency.* Lexington: The University Press of Kentucky, 2004. Notes. Bibliography. Index. Pp. xxvii, 298. $19.95 Paperback ISBN: 0-8131-9161-0

Davis, Richard G. *Bombing the European Axis Powers: A Historical Digest of the Combined Bomber Offensive*, *1939-1945.* Maxwell AFB, Ala.: Air University Press, 2006. Notes. Appendices. Index. [Includes a CD-ROM containing maps, charts, illustrations, and bombing data]Maps. Photographs. Notes. Glossary. Bibliography. Index. Pp. xvii, 630. ISBN: 1-58566-148-1 http://aupress. maxwell.af.mil

*Guth, Gilberta. *The Fighter Pilot's Wife: A military Family's Story.* Novato, Calif.: Call Sign Press, 2006. Photographs. Pp. 376. $19.95 Paperback ISBN: 0-9768678-0-X

Jenkins, Brian Michael. *Unconquerable Nation: Knowing Our Enemy, Strengthening Ourselves.* Santa Monica, Calif.: RAND, 2006. Illustrations. Notes. Appendices. Bibliography. Index. Pp. viii, 222. $19.95 Paperback ISBN: 0-8330-3891-5

Jones, Tim. *SAS Zero Hour: The Secret Origins of the Special Air Service.* Annapolis, Md.: Naval Institute Press, 2006. Photographs. Notes. Bibliography. Index. Pp. 239. $32.95 ISBN: 1-59114-805-7

LaGuardia-Kotite, Martha J. *So Others May Live: Saving Lives, Defying Death with the Coast Guard's Rescue Swimmers.* Guilford, Ct.: The Lyons Press, 2006 [an imprint of the Globe Press]. Photographs. Appendix. Pp. 260. $22.95 ISBN: 1-59228-931-2

* Salah, Michael and Mitch Weiss. *Tiger Force: A True Story of Men and War*. New York and Boston: Little, Brown and Co., 2006. Map. Photographs. Notes. Index. Pp. xi, 401. $25.95 ISBN: 0-316-15997-2

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: **scottwille@aol.com**

* Already under review.

Aug 29-31

The **Association for Unmanned Vehicle Systems International** will host the "Unmanned Systems North America 2006" Symposium and Exhibition at the Gaylord Palms Resort and Convention Center in Orlando, Florida. Contact:

AUVSI
2700 S. Quincy Street, Ste. 400
Arlington, VA 22206
(703) 845-9671, Fax x9679
e-mail: info@ausvi.org
website: http://www.ausvi.org

Sep 19-21

The **American Institute of Aeronautics and Astronautics** will hold its Space 2006 conference, "The Value Proposition for Space Security, Discovery, Prosperity," at the San Jose Convention Center in San Jose, California. The conference will address a wide array of topics, including technical, economic, and policy themes, to provide a forum to discuss "the value proposition for space." Contact:

website: http:://www.aiaa.org/content.cfm?pageid=1

Sep 19-21

The **NASA History Division** and the **Department of Space History** at the **National Air & Space Museum** will co-host a conference on "The Societal Impact of Space Exploration." The meeting will be held in Washington, DC., at the Hirshhorn Museum. Registration is free, but reservations are recommended at histinfo@hq.nasa.gov. Contact:

NASA History Division
Office of External Relations
Washington DC 20546
(202) 358-0384
e-mail: histinfo@hq.nasa.gov
website: http:/history.nasa.gov

Oct 12-15

The **Society for the History of Technology** annual meeting will be held at the Imperial Palace in Las Vegas, Nevada. Contact:

website: http://shot.press.jhu.edu/.

Nov 2-5

The **History of Science Society** will hold its annual meeting in Vancouver, British Columbia. Contact:

website-http://www.hssonline.org/society/index.html

Nov 16-18

The **French Ministry of Defense** [*Service Historique de la Defense* (SHD)] is hosting a history conference in Paris, on "The Suez Crisis and the Western Powers." Contact:

SHD
Relations Internationales
BP 166
00468 Armees – France
Tel.: 01.41.93.22.23

Call for Papers
Society for Military History
74th Annual Meeting
Frederick, Maryland
April 19-22, 2007

The Catoctin Center for Regional Studies located at Frederick Community College will host the 74th meeting of the Society for Military History. The conference will take place April 19-22, 2007 in historic Frederick, Maryland which is located forty-five miles west of Washington, D.C.

The theme for the conference will be Crossroads of War. The Program Committee seeks papers and panels that address those intersections during the war-time experience between the military and other sectors of society, including, but not limited to, the home-front, the economy, politics and constitutionalism, as well as culture. This topic includes both the impact of the military on society as well as the influence of societal factors in shaping and defining the military experience during war. Although the conference will focus on the Crossroads of War, the Program Committee also desires papers and panels dealing with any facet of military history.

Panel proposals must include: 1) A panel coversheet listing the title of the panel and contact information for all members, 2) A brief overview of the panel highlighting its scholarly contributions, 3) One-page abstracts for each paper, and 4) A brief vitae for all members of the panel, including chairpersons and commentators. Individual paper proposals must include a one-page abstract and brief vitae. The Program Committee welcomes volunteers to serve as chair persons and commentators. Volunteers should submit a vitae with their request. All information related to the conference can be found online at http://catoctincenter.frederick.edu/.

Deadline for this call for papers is October 15, 2006. The Program Committee prefers that all proposals be sent electronically by e-mail attachment in Microsoft Word. If this is not possible, hard copies can be sent. Submit all materials to:

E-Mail Address - smh2007papers@yahoo.com
Mailing Address:
SMH Papers 2007
PO Box 839
Carlisle, PA 17013

Message from the President

The Board of Trustees of the Air Force Historical Foundation has announced a restructuring of membership dues. The Board desires to provide a significant cost reduction to college students, cadets at service academies and in ROTC programs, junior officers (lieutenants and captains), and enlisted members to encourage membership: $25 for two-year membership. Also, to encourage new memberships other than those mentioned above, an introductory membership will cost $25 for the first year. Renewal of regular memberships will continue at $45 per year. Institutional subscriptions to *Air Power History* will also continue at $55 per year.

College students, cadets at service academies and ROTC programs, junior officers (O-1 through O-3), and enlisted members – 2 year membership:	$25
All other new members – 1 year membership	$25
Renewal of regular 1 year membership (no change)	$45
Institutional 1 year subscription (no change)	$55

The Board has also announced a restructure of the cost of **life membership** to encourage life members by ensuring an appropriate savings (approximately 2/3 the cost of regular annual renewal over the period of enrollment).

Age 35 or under	$1200
Age 35 through 44	$ 900
Age 45 through 54	$ 600
Age 55 and older	$ 300

These membership costs are effective as of July 1, 2006, are reflected in the Foundation's new membership brochure, and will be displayed on our upgraded Web site.

The Board requires the new dues structure to:

- Encourage new members, particularly among the Regular, Reserve, and National Guard forces in active service and in particular younger people in education and training programs – the future of our air and space nation
- Encourage life memberships over annual memberships as well as the commitment to the goals of the Foundation represented by life membership
- Set aside life member dues to endow the Foundation's programs for the future
- Better defray the costs of operating of the Foundation

Lt. Gen. Michael A. Nelson, USAF (Ret.)
President of the Air Force Historical Foundation

The Best Article in 2005

The winner of the best article to appear in *Air Power History* in 2005 is Dr. Don D. Chipman for his "Desert Storm and the Triumph of Joint Warfare Planning." Appearing in the Spring issue, this article explores the work leading up to air power's part in the decisive victory of 1991. Planning for that campaign was at times very contentious, and it was by no means clear in August of 1990 how the Air Force would construct its portion of the campaign to meet the expectations of the President and secretary of defense, to say nothing of General Norman Schwarzkopf. Chipman's article is very readable, while applying superb scholarship in explaining how the air plan for Desert Storm developed. Because of the rapid adoption of new technology after the Southeast Asia War that ended in 1973 and with it the Air Force's ability to deliver precision attacks on enemy resources, the Air Force had to devise new strategies and techniques for air warfare able to match these new capabilities and defeat an enemy forcefully and quickly. Since Desert Storm, new aircraft, weapons, and delivery systems continue to provide even more effective support to national objectives. Understanding how this employment of air power has developed in the recent past will allow a better understanding of how to use our aerial warfighting resources even more adroitly in future conflicts.

Competition this year was very close, with several articles in hot contention. Excellent works by L. Parker Temple on the lack of a national policy on use of the Space Shuttle, and Paul Johnson on the influence of British practices on U. S. Army Air Forces tactical air power during World War II were close contenders.

This is the second year that the Air Force Historical Foundation has made this award; it carries a prize of $500, and is intended to recognize the exceptional level of work that goes into producing the fine articles that we have in our Journal.

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. 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.

If an article is typed on a computer, the disk should be in IBM-PC compatible format and should accompany the manuscript. Either 3 1/2-inch floppy or a CD-R can be utilized. Disks should be labelled with the name of the author, title of the article, and the software used. Microsoft Word, in any version number, is preferred. Other word processors can be accommodated.

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,* P.O. Box 10328, Rockville, MD 20849-0328, e-mail: jneufeld@comcast.net.

Cover Photo

The *Air Power History* Summer 2006 issue was excellent, and thanks for all that the Air Force Historical Foundation does. But I believe that the cover photo was not identified correctly. Those Thuds—or at least 229 and 152—were from the 357th TFS, 355th TFW.

Maj. Gen. Hal Hermes, USAF (Ret.)

"Always Above"

Editor's Note: The following was sent to the author, Lt. Col. Thomas G. Bradbeer, USA (Ret.).

I am a flight surgeon at Loughlin AFB, Texas, and an amateur historian. I wanted to let you know how much I enjoyed your article, "Always Above: Major Edward 'Mick' Mannock in World War I," published in the Spring 2006 issue of *Air Power History.* You captured some of the personal aspects of Major Mannock's wartime experience as well as his accomplishments. And the photos added to the article. Thank you for spending the time and effort on this fascinating topic.

Maj. Douglas S. Files, USAF, MC, FS, Del Rio, Texas.

Slanguage Lives On

I read with interest Brig Gen Gunderson's article, "Slanguage Revisited." As the former editor of the U.S. "Brevity Codes" document that defines the language used to communicate with tactical aircraft via radio, I was surprised to learn the origins of several of the brevity words in use today. Of the list published in the article, several of the World War II RAF/USAAF terms remain in our tactical language: ANCHORED, BOX, CHICKENS (now CHICKS), FATHER, GRAND SLAM, MOTHER, POPEYE, and SCRAMBLE.

Today, however, the terms are not intended to restrict an enemy from knowing what pilots are actually doing in the air because today's voice communications are via secure and frequency hopping radios. Rather, the purpose of brevity words ("slanguage") is to communicate precise tactical information/instructions with a single word via a common, agreed-upon vocabulary. Single words can convey an entire sentence or even several sentences of information. A few words can be strung together to convey volumes of unambiguous information/instructions. The large number of players on a single C2 frequency does not allow for ambiguity or long conversations and everyone must be fluent in this tactical language.

Data links go one step further in reducing confusion and transmission time, but until everyone on the battlefield, including our allies, is equipped with interoperable digital communications, these "slanguage" words will be around for some time to come.

Lt. Col. Pete "Toes" Bartos, USAF

The Unforgettable B–29s

Reference the *Air Power History.* Spring 2006 article, "The Unforgettable B–29s: A Tribute," by Yang Jing. Navigation aids were all but non-existent in China, and what there were had limited range and proved unreliable. The distances involved and terrain over which operations were conducted made it a sporty course. Unlike today's jets, the most efficient operating altitude for those airplanes was sea-level—not 30,000 ft. plus of today's jets.

I never attended a navigator briefing, so I don't know what was said there about mountains. Rarely did a navigator mention nearby terrain to me. Planning an instrument letdown always raised my awareness of terrain and obstacles in the terminal area, and it wasn't until I encountered Gen. Curtis LeMay's postwar (SAC) regulation—requiring pilots filing cross country flight plans to write on the face of the flight plan the highest terrain within 100 miles of both sides of intended line of flight—that I thought about lack of such a rule in CBI. This is part of why the Fourteenth and Twentieth Air Forces scattered so many on Chinese mountains.

On August, 20, 1944, the 58th Wing tried bombing Japan from China in daylight and lost about seventeen planes, a third of which hit mountains. Our navigator became lost, and based his return on DR and DF steers. We got home that night by maintaining 11,500 ft. altitude in hopes we would clear the terrain between Shanghai and home

When the B–29s moved from India-China to Tinian, we flyboys thought we'd died and gone to heaven. One reason was that the terrain between the Marianas and Japan was mostly open ocean and a B– 29 flying on two engines had a far better chance to fly 750 miles to reach Iwo Jima than if it had to fly 750 miles to reach an airfield in China. The Chengtu Area sits in large bowl 450-500 miles across. The bowl's rim has 8,800-foot high peaks near routes to Japan, Manchuria, and Formosa.

This meant that within an hour after takeoff a heavily laden B–29 had to lift its load over those mountains. If the weather remained unclear when returning, you had to stay above those mountains because less fuel was needed to maintain altitude than descend.

December 7, 1944 was one of that winter's coldest days in the Chengtu Area. I had a welder make a large space-heater from 55-gallon drums to warm our "lounge." GIs could duck into it, and get warm. About the time flight crews were expected to start returning, I headed for the control tower, parked the jeep, and looked northward as B–29s started landing. Frank Martin came-in with 'bone dry' tanks and landed with clear ice covering his entire nose. We had no crash crew, fire truck, or ambulance. Frank leveled-off high, and dropped it in. From where I stood, he appeared to be headed straight toward the tower and me. He seemed to hang in the air, then fell straight-down 75-100 feet! I never saw an airplane fall so far. When it hit the ground, the fuselage failed, just aft of bomb bay and was dragged along the ground. The right outer wing panel broke at the attachment point outside the number four engine. After rolling a short distance, the plane headed off to its right, to the West. Martin couldn't see. It crossed a drainage ditch that collapsed the nose wheel and came to rest with its nose sitting on the ground. Two men suffered minor scratches. The airplane sat on its main gear, nose on ground, and rear portion of fuselage flat on the ground-all still hanging together in more or less one piece. It was the sickest looking B–29 I had ever seen. That was the 26th class. As luck would have it, my original flight engineer was flying with a crew that hit a mountain that day, coming back from the target.

James L Pattilo, Santa Barbara, California.

A Pilot's Log

I found several discrepancies in the article, "Radar Bombing during Rolling Thunder—Part II: Combat Lancer and Commando Club, by Howard Plunkett, starting with next to last paragraph on page 7 [*Air Power History* Summer 2006.] My Korat experience was helped by the mission log that I kept, the tape recorder that I carried in the cockpit, and the letters I wrote home.

The 388th flew its first Commando Club mission on November 15, 1967. The target was the Hoa Loc airfield and I was on the mission. I was also on the second one the next day against the Bac Mai airfield. Radar contact was lost on this mission and the target was not hit. On the

November 18 mission, only the sixteen strike aircraft carried ECM pods for a total of sixteen—not twenty-seven. Colonel Burdett was not leading the mission. He was Garage #3 which was the third strike flight. He would not have made the radio call attributed to him. One beeper was heard from Waco lead, so both did not die in the crash. Les Hauer was Vegas lead—the second strike flight. Laredo was the lead flight. My log showed that Les Hauer had a good chute. Before we all jettisoned our bombs, we were told by the radar site that they had lost radar contact and we would have to go back out and be reacquired for another run. At about this time we got MiG calls. As far as I can remember, this was the last Commando Club mission into Pack VI. So I question whether the 388th history is correct on the assertion that single flight, standard ECM formation was used for subsequent flights in Pack VI."

Lt. Gen. Spence "Sam" Armstrong, USAF (Ret.)

The Author's Reply

General Armstrong's comments point up the challenge to researchers of recreating an historic event based only on official records that may prove wrong or misleading. General Armstrong sent me a copy of his mission log. I wish I had it last summer when I was writing my article. I used pilot mission logs and combat diaries in other parts of the story but had not connected with anyone like General Armstrong who flew on the November 18, 1967 Commando Club mission against Phuc Yen Airfield. Here's what my source documents had on this mission compared to General Armstrong's record.

The 388th TFW history for the period April-December 1967 said in at least four places that the wing flew their first Commando Club mission on November 18. However, the log that General Armstrong wrote as a major in the 34th TFS documented Korat's first Commando Club mission on November 15 against Hoa Lac Airfield. As he recorded in his log, their bombs fell two to four miles past the target. He flew as #4 in an Iron Hand flight on the second Commando Club mission on November 16 against Bac Mai Airfield but the strike pilots aborted the mission and jettisoned their bombs when they lost radio contact with the radar controller. The 388th Wing history did not mention either mission.

I relied on the Red Baron II Report, Event 59, page 71, for the number of ECM pods carried by the strike F-105s: "The 16 F-105s had twenty-seven operative ALQ-71 ECM pods." I know from my research that some F-105s at the time carried a pod on each of their outboard stations so this number seemed reasonable to me.

My most serious error that General Armstrong pointed out was writing that Colonel Burdett led the mission. My reference for this was a secondary source. In his book, "One Day Too Long", Timothy Castle, then an associate professor at Air University, wrote (p. 58), "On November 18, 1967, Colonel Edward B. Burdett led an F-105 strike force of sixteen aircraft against Phuc Yen airfield." The mission account in the 388th history did not mention the mission commander. If the wing history had included OPREP messages for this period as some wing histories do, I might have caught the error. Another opportunity for spotting the error was in the Navy's CNA Loss/ Damage Database report. Frustratingly, the call sign field in this report was not wide enough to print the position number of the downed aircraft. The Red Baron II report on the mission, typical of their mission descriptions, did not use pilot names and real call signs, but if I had read the report more carefully, I could have discerned that their "Orange 3" was Colonel Burdett, "Garage 03." General Armstrong's log gives the flight call signs for the mission and the lineup for his flight but doesn't record the name of the mission commander. He has told me that he doesn't remember the name. I'm still researching this significant detail and would like to hear from anyone else who flew this mission and knows the name of Laredo 01.

The 388th history states that they flew 38 Commando Club missions in December 1967, five to RP-6, one of which was to JCS 21.11, the Thai Nguyen Railroad Yard. It, however, gives no specific dates or results for the five RP-6 missions mentioned.

I wish to thank General Armstrong for kindly sharing his mission log with me. It's an invaluable contribution to my research into F-105 combat operations.

W. Howard Plunkett

News

New CMSAF Named

On July 1, 2006, CMSgt Rodney J. McKinley, became the 15th CMSAF, succeeding CMSAF Gerald R. Murray, who retired after 29 years of service.

Chris Patterakis, 1935-2006

Chris Patterakis, seventy, died of a heart attack on May 9, 2006, while visiting Patrick AFB, Florida. Mr. Patterakis was the Air Staff's deputy assistant secretary for strategic diversity integration. He enlisted in the Air Force in 1953 and served as a military policeman. Subsequently he joined the Air National Guard, completed flight school, and transferred to the Air Force in 1964. In less than two years he became a member of the Air Force Thunderbirds elite aerobatic team and later its commander. He flew 315 combat sorties during the Vietnam War. Major Patterakis retired in 1978, having earned six Distinguished Flying Crosses, twenty-one Air Medals, and two Air Force Commendation Medals. He ran for Congress in California, but lost. Before his civilian appointment to the Pentagon, he flew with United Airlines and served as an executive with Northrop. Mr. Patterakis is survived by his wife Vicki, four children, four grandchildren, and a brother.

Reunions

Pilot Class 43-K will hold a reunion September 6-10, 2006, in Chattanooga, Tenn. Contact:
Hal Jacobs
(707) 426-4959
e-mail: jakes43k@aol.com
or
March Dean
(334) 514-6877
e-mail: yoe43k@elmore.rr.com

The **Sampson Air Force Base Association** will hold a reunion September 7-10, 2006, at Sampson State Park, Seneca Lake, Romulus, New York. Contact:
Chip Phillips
PO Box331
Williamsville, NY 14231-0331
(716) 633-1119
e-mail: chip34@aol.com

The **27th Air Transport Group** (310th, 311th, 312th, 325th Ferrying Sqdns.; 86th, 87th, 320th, 321st Transport Sqdns.; 319th, 320th Service Sqdns.) will hold a reunion September 25-28, 2006, in Las Vegas, Nevada. Contact:
Fred Garcia
6533 W. Altadena Ave.
Glendale, AZ
(623) 878-708

Major General Ramsay D. Potts
1916-2006

The former president, trustee, and patron of the Air Force Historical Foundation and publisher of *Air Power History*, Maj. Gen. Ramsay D. Potts, USAF, (Ret.), died on May 28, 2006 in Boynton Beach, Florida, following a stroke.

A native of Memphis, Tennessee, where he was born on October 24, 1916, he graduated from the University of North Carolina, Chapel Hill, in 1941. There, he was a star on the varsity tennis team, a sport he continued to enjoy as a ranked amateur the rest of his life. He also was a starting guard on the varsity basketball five.

Immediately enlisting in the Air Corps, he became a pilot and was commissioned as a second lieutenant five days after the attack on Pearl Harbor. Ramsay transitioned into B–24 aircraft and flew with the 44th Bombardment Group as they moved to England and then temporarily to North Africa. He flew in the famed August 1, 1943, low-level raid against the Ploesti, Rumania, oil refineries. After the war, he used to banter with Gen. Leon Johnson, his group commander, who was awarded the Medal of Honor for the mission. "Leon," he teased, "you got my medal."

Following his return to England, he continued to fly combat and as a colonel age twenty-seven, first commanded the 389th Bomb Group at Hethel and later the 453d at Old Buckenham. At the latter, actor Jimmy Stewart was Ramsay's executive officer, beginning a lifelong friendship. Ramsay's final wartime service was as director of bombing operations for the Eighth Air Force. With the European war ended, Potts was assigned to the U.S. Strategic Bombing Survey, where his extensive combat experience was valuable in assisting in the interrogation of Nazi leaders, including Hermann Goering, Adolf Galland, Alfred Jodl, and Karl Doenitz.

Although urged to remain in the active military, Colonel Potts chose to return to civilian life and in 1948 graduated from Harvard Law School. In 1958, with three other partners, he formed Shaw, Pittman, Potts & Trowbridge in Washington, D.C., a law firm he managed until 1986. Today, through growth, mergers, and name changes it has offices in D.C., New York, Los Angeles, and London and employs more than 900 lawyers. Ramsay earned a great reputation for his collegiality and respect for his associates, the law, and his clients. One partner recalled that Ramsay, "saw the humanity and potential of every young lawyer with whom he worked." In the words of another colleague, "Ramsay allowed each individual to achieve his or her fullest potential." While he managed the organization, "not one partner left the firm to join another."

Modest almost to the point of reticence about his war record, Ramsay was not a "hand flyer," who embellished how thick the flak coverage was over the target or the lethality of enemy fighters, even though his B–24 "Duchess" had limped back to its North African base from Ploesti riddled with fifty fist-size holes in the fuselage and wings. His many wartime heroics were recognized by the award of the Distinguished Service Cross, two Silver Stars, the Legion of Merit, three Distinguished Flying Crosses, five Air Medals, the Bronze Star, the British Flying Cross, and the French Croix de Guerre.

Among the myriad activities in which the tireless Ramsay Potts participated were these: president, Military Air Transport Association; faculty member at the Air War College; chairman, Air Force's Air Reserve Policy Committee; director, Emerson Electric Co.; associate counsel, Senate Armed Services Subcommittee; special assistant, National Security Resources Board; assistant, Reconstruction Finance Corp.; member, Hudson Institute; member, Virginia Board of Higher Education; and vice chairman, Physicians for Peace.

I had the privilege, as a young officer, to serve on his staff when he commanded a Reserve transport wing at Andrews AFB, Maryland. Despite the heavy demands of his law practice, Ramsay maintained his pilot proficiency in the unit's C–119 aircraft. During a summer encampment at Ft. Campbell, Kentucky, Gen. William Westmoreland, commanding the 101st Airborne Division, had scheduled a courtesy call on Ramsay. I was instructed not to allow any interruptions during the visit. One of Ramsay's group commanders arrived and announced that he had to see the boss immediately. I followed my instructions precisely, even declining to inform the by now irate colonel who was closeted with Ramsay. He stormed out telling me that I hadn't heard the last of this. After relating the details, feeling I was destined to serve at my existing rank forever, Ramsay smiled, congratulated me and asked how I had managed to insult the insufferable, pushy, insensitive colonel with the hide of a rhino.

Later, during the 1970s, as an executive secretary of an advisory committee on which Ramsay served, I arranged for him to park at the Pentagon. However, when I appeared the guard explained his reluctance to clear Ramsay's VW Beetle adorned with peace symbols—the only wheels Ramsay said had been left at the house that day by his children. Of course, Ramsay was much less disturbed by the matter than was the bewildered guard.

Most importantly, readers of this journal and members of the Foundation owe a great deal of gratitude to Major General Potts. During the 1970s, when the angst over the ongoing Vietnam War impacted adversely on most military activities and related studies, Ramsay, although listed as president, was in effect *the* Foundation. Its declining assets and membership resulted in the Foundation physically operating *pro bono* from Ramsay's law office for the crucial years 1970-1974. Without his moral, financial, and administrative support, as well as his dedication, it is doubtful the Foundation could have survived.

His memorial service on June 23, in the District of Columbia, was attended by several hundred mourners. He is survived by four children, six grandchildren, a brother, and three sisters. He was interred in Arlington National Cemetery beside his wife of forty-eight years, Veronica Raynor Potts, who predeceased him in 1993.

Major General Potts, modest patriot, intrepid war hero, prominent lawyer in a praised generation, stands tall. He was a man who loved his family, his country, the law, and history. He will be missed as well as fondly remembered.

A tribute by Maj. Gen. John H. Huston, USAF (Ret.).

The **1st Fighter Association (27th, 71st and 94th Squadron**s) will hold a reunion September 10-14, 2006 at Hampton and Langley AFB, Virginia. For details and registration visit:
www.1stfighter.org

The **Association of Air Force Missileers** will hold a reunion September 27-October 1, 2006, in Cheyenne, Wyoming. Contact:
AAFM
PO Box 5693
Breckenridge, CO 80424
(970) 453-0500
e-mail: aafm@afmissileers.org

The **391st Bombardment Group** will hold a reunion in fall 2006 [TBA]. Contact:
Bill Graves (256) 534-6711

Pilot Class 56-H will hold a reunion October 4-6, 2006, at Reese AFB, Tex.: Contact:
(865) 458-1535
or
(386) 324-3342
e-mail:
dsprich@charter.net
or
gjaspers@cfl.rr.com

Pilot Class 56-V will hold a reunion October 13-15, 2006, in Eureka Springs, Ark.: Contact:
George Partridge
105 Quail Run
Prattville, AL 36067
e-mail: gpartridge56v@knology.net

The **510th Fighter Squadron** "Buzzards" will hold a reunion September 9-12, 2006 at Colorado Springs, Colorado. Contact:
Stephen W. Tanner
(281) 550-5518
www.510fs.org

History Mystery

by Robert F. Dorr

A civilian Ercoupe sport plane owned by retired Army Specialist Six Robert "Bob" Hauger of Winterport, Maine, was the subject of our "mystery" photo in the summer issue as well as the follow-up image that appears here. Hauger's plane never served in the armed forces but is painted to represent a typical Army Air Forces (AAF) aircraft at the time of the 1941 Pearl Harbor attack that brought the United States into World War II. As usual, *Air Power History* readers identified the plane correctly and knew many of the details of the military use of other Ercoupes.

The Ercoupe derived its name from Engineering Research Corporation, or Erco, where aerodynamicist Fred Weick designed the two-seater. The first Ercoupe flew on October 1, 1937. Erco built about 200 before the war.

After V-J Day, the planemaker built 4,400 Ercoupes in Riverdale, Maryland, a suburb of Washington, D.C., where many residents no longer remember that an aircraft manufacturer once thrived in their midst. Erco built most of its planes during 1946, when production sometimes reached 25 Ercoupes per day. Three other manufacturers contributed to the eventual total of 5,605 Ercoupes.

There were two military versions: The AAF tested two Ercoupes as the PQ-13 aerial target drone, apparently with unsatisfactory results. A sole YO-55 Ercoupe became the first U.S. aircraft to make a rocket assisted takeoff, or RATO. [Because the term "rocket" invited public ridicule, contemporary engineers called them JATO units, for jet-assisted takeoff..]

A web site of the Experimental Aircraft Association explains how the National Advisory Committee for Aeronautics attached six solid-propellant rockets to the YO-55 at March Army Airfield, California, and sent 1st Lt. Homer A. Boushey aloft, under rocket power: "The pilot, no doubt a brave one, ignited a blend of perchlorate, asphalt, and special oils with an instrument panel switch. In a blinding flash of light and dense smoke, Lt. Boushey launched himself in only 300 feet and 7.5 seconds instead of the Ercoupe's usual 581 feet and 13.1 seconds!"

Rocket-assisted takeoff became a staple of American air power in the late 1940s and 1950s. Large aircraft like the B-47 Stratojet bomber gained significant extra power during takeoff being pushed by RATO "bottles" that added to the thrust provided by the plane's own engines.

A typical Ercoupe had a 65-horsepower Continental engine. The military never found further use for the plane, but several hundred are flying in civilian hands today. The state of Alaska used Ercoupes to patrol the Alaska Pipeline as recently as 2003.

It's the slow season. A mere fifteen readers entered the "History Mystery" contest (nine via e-mail) and all identified the Ercoupe correctly. Our History Mystery winner, chosen at random from among correct entries, is Don Boose of Carlisle, PA. He'll receive as his prize a copy of *Chopper: A History of American Military Helicopter Operations*, by Robert F. Dorr.

This Issue's Mystery Plane

Once more, we present the challenge for our ever-astute readers—moving this time from little to large. See if you can identify this month's "mystery" aircraft, seen in a photo from reader Norman Taylor. But remember the rules, please:

1. Submit your entry on a postcard. Mail the postcard to Robert F. Dorr, 3411 Valewood Drive, Oakton VA 22124. Entries may also be submitted via e-mail to robert.f.dorr@cox.net.

2. Correctly name the aircraft shown here. Also include your address and telephone number. Entries not accompanied by a phone number will be disqualified. If you have one, please include your e-mail address.

3. A winner will be chosen at random from the postcards with the correct answer. The winner will receive an aviation book.

This feature needs your help. In that attic or basement, you have a photo of a rare or little-known aircraft. Does anyone have color slides? Send your pictures or slides for possible use as "History Mystery" puzzlers. We'll return them to you.