WHO FEARS?

301st VETERANS ASSOCIATION

"Who Fears?"

The 301st In War and Peace

1942-1979

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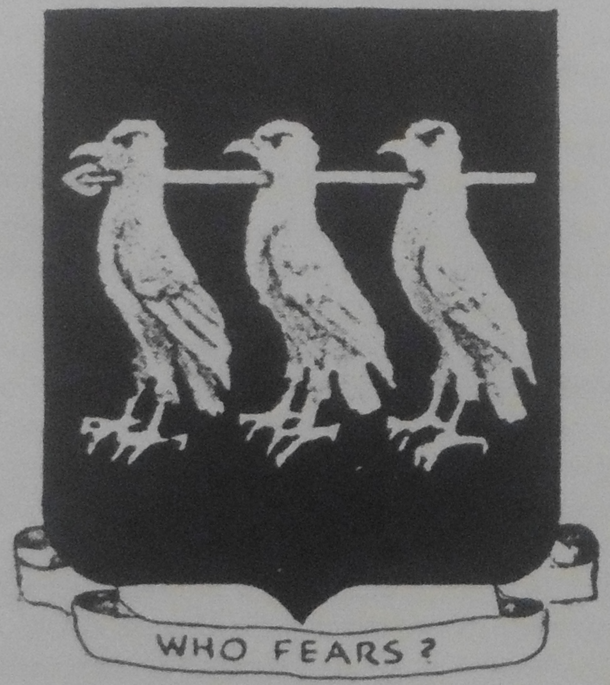
THE 301ST EMBLEM

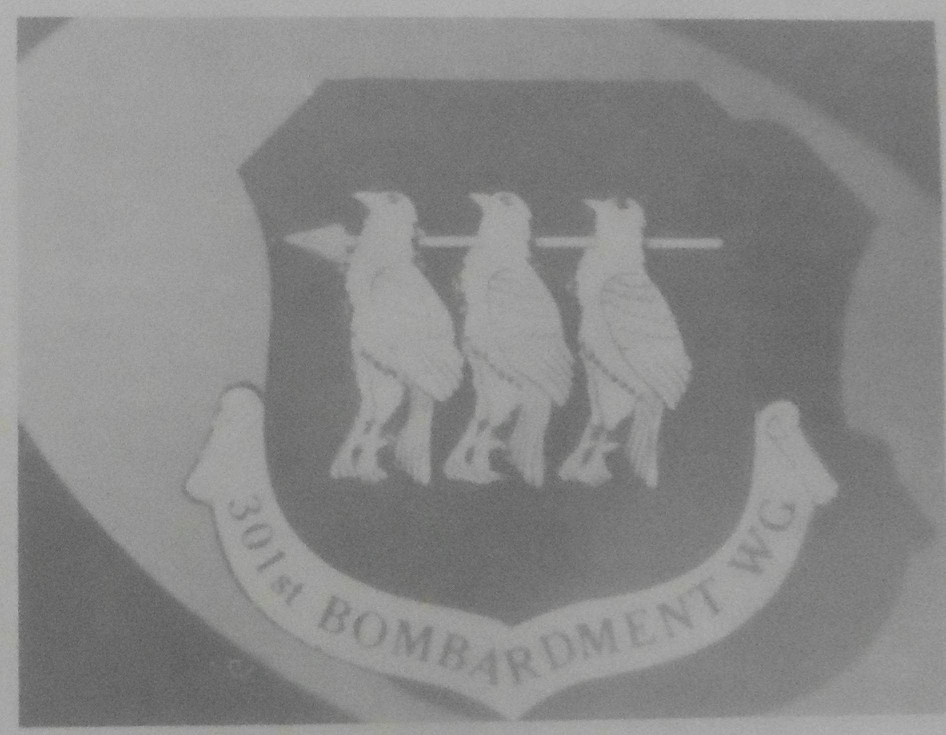
The 301st emblem was approved in August 1942. It consisted of three impaled ravens on a single spear in the colors of the air force. This alluded to the idea of "bring back the scalps" or "three birds with one stone." The reference was to America's three foes at the time: Germany, Italy, and Japan, personalized by Hitler, Mussolini, and Tojo. It may also have been connected with numerology of "three" and "one" of the Unit's designation. The motto with "Who Fears?" in the scroll was approved at the same time.

In July 1952 the square shaped coat of arms was replaced with a badge shape, and the motto in the scroll was replaced by the unit designation: "301st Bombardment Wing."

In July 1959 the emblem was changed to reflect the Unit's change in mission from bombing to electronic warfare. A stylized flight symbol above a bolt of lightning and below stars suggested limitless space and the power it holds. The symbol was superimposed on an olive branch implying a peace of vigilance inherent in the mission of the Unit. The motto, "Who Fears?" continued. The inscription in the scroll was of course changed to "301st Air Refueling Wing" when the Unit was redesignated in June 1964.

The present 301st uses the same emblem.





CHAPTER I

THE BACKGROUND OF AMERICAN STRATEGIC BOMBING

The airplane first saw combat in the Italo-Turkish War of 1911-12, less than ten years after the Wright brothers made man's initial powered flight. When World War I erupted, most soldiers and sailors still regarded the airplane as a toy having little military significance. But following a brief period during which opposing airmen exchanged friendly waves, the warring aviators began to exchange bullets. The airplane proved to be very valuable during the "Great War," especially in support of ground troops while performing such roles as scouting (reconnaissance and observation), bombing, and pursuit (anti-scout).

In contrast to the extensive tactical employment, neither side put much effort into strategic bombing attacks. German Zeppelins, as well as Gotha and Giant bombers, flew 630 sorties against targets in England, dropped some 302 tons of bombs, killed over fourteen hundred people, and caused some riots, a few panics, and finally in 1918 the creation of the separate Royal Air Force (RAF). The British also formed an independent bombing force, ostensibly for strategic bombing operations. "Ostensibly" because the independent bombing force aimed 40 percent of its bombs at German airfields. The Allies also attacked German cities, although the limited range of their bombers safeguarded Berlin. In November 1918 the armistice stopped both the war and British plans to employ longer-range bombers against the German capital and other cities. It is noteworthy in view of later events that Germany initiated bombing of cities and civilians, and that this effort was so small.[1]

Aviation capabilities greatly increased during the years following World War I. While most writers focus on the glamor and glory of the barnstormers and record breakers — the heroes and heroines of the era — military aviation was growing as well. During the 1920s and 1930s the airmen and manufacturers created the necessary elements for the air war of 1939-1945. Two significant parts of this development were the evolution of aviation technology and the strategic bombing doctrine that would employ this new technology.

The Development of Aviation Technology

Aviation technology grew at a rapid, although uneven, pace after the war. This progress resulted from developments in a number of areas, the most important of which were engines, propellers, and airframes.

The most dramatic improvement occurred in the area of engine power. It rapidly increased from the 220 horsepower for one of the leading fighters of World War I, the Spad XIII, to 1,045 horsepower in 1936 in the prototype of one of the leading fighters during the 1930s and 1940s, the Spitfire. A number of factors helped engines achieve greater power, one of the greatest contributors to increased engine performance was improved fuels. Significantly, the Germans trailed the Allies in the use of high octane gasoline before and during World War II.[2]

Propellers also improved. Initially aircraft used fixed-pitch propellers, whose blade angle could only be set while the plane was on the ground and thus restricted maximum performance to one flight condition at one altitude. Variable (or controllable) pitch propellers allowed the pilot to change the blade angle while in flight to achieve maximum performance for different altitudes and flight requirements. In addition, these props permitted feathering — streamlining the blades of an inoperative engine to minimize drag, which greatly enhanced the performance of a multi-engine aircraft with disabled engines. Heretofore props on dead engines stopped or rotated freely ("windmilled"), with either condition creating increased drag. Constant-speed propellers, which maintained propeller rpm (revolutions per minute) by varying the propeller's pitch regardless of engine speed or load appeared in 1934.[3]

Airframes also advanced. Builders switched to all-metal construction that deleted wire and wood bracing and thus reduced both weight and drag. Designers further streamlined airframes by replacing multiple wings with monoplane configuration, enclosing open crew positions, shrouding engines in cowlings, and substituting retractable gear for fixed landing gear. Manufacturers added wing flaps to aircraft, which increased both lift and drag (more of the former than the latter), and thus permitted heavier aircraft to take off and land in shorter distances and at slower airspeeds. These improvements increased both performance and safety. The result is dramatically illustrated by comparing two Boeing aircraft of the early 1930s, the P-12 (F4B) series biplane fighter, the last of a breed, and the 247 series monoplane airliner, the sire of another. The latter featured most of the technological devices listed above and could reach a top speed of 200 mph, while the former initially had a top speed of 189 mph. Eleven mph may not seem much, but considering the different purposes of the two aircraft, it highlights the technological revolution.[4]

Understandably the Air Corps wanted to incorporate these new technologies into their aircraft. After experimenting with a number of aircraft during the early 1930s, most notably were the twin-engine Boeing B-9 and Martin B-10, the airmen finally found what they were seeking: the Boeing B-17, an aircraft that would equip the 301st during its early history. In 1934 the Air Corps officially opened a design competition for a multi-engine, high-performance bomber. Boeing engineers showed financial and technological daring by designing a bomber with four engines that featured clean lines; numerous machine gun enclosures; Hamilton constant-speed propellers; wing and cowl flaps, a position to the right of the pilot for a copilot; and flying tabs, which used aerodynamic force to move the controls and thus greatly reduced the pilot's workload.

The Project 299 aircraft, as it was designated, first flew in July 1935 and quickly demonstrated its outstanding performance by covering the twenty-one hundred miles between Seattle, Washington, and Dayton, Ohio, nonstop at an average speed of 232 mph. It came as little surprise the Boeing aircraft proved far superior to the twin-engine Douglas and Martin entries. However, the prototype crashed during a flyoff in front of the Air Corps Selection Board in October 1935, dashing Air Corps and Boeing hopes for quantity procurement. Although caused by pilot error, failure to unlock the control surfaces, this takeoff-crash produced disastrous publicity and technically meant the Boeing entry had failed the competition.[5]

Despite the setback, the airmen did obtain thirteen Boeing bombers, which became the B-17 upon completion of service tests. They could reach a maximum speed of 256 mph at 14,200 feet and a service ceiling of 30,600 feet.[6] Normally the bomber carried a 2,496-pound bombload for 910 miles. Henry H. Arnold, Chief of the Army Air Forces (AAF)[7] in World War II, wrote in 1947 that the development of the four-engine bomber marked the turning point in American airpower. The B-17 became, in his words, "the focus of our air planning, or rather of the Air Corps' fight to get an air plan — some kind of genuine air program — accepted by the Army."[8] The "Flying Fortress" as it was soon named was the finest aircraft of its class, years ahead of any heavy bomber then flying or to fly in the 1930s. Further, it reinforced the beliefs of many during this period who believed in the bomber's superiority over the fighter. Yet until 1939, the year World War II erupted in Europe, America possessed only thirteen B-17s.[9]

At the same time aviation technology made the great advances that produced the Boeing bomber, another element vital to American strategic bombing emerged: an accurate high-altitude bombsight. As early as 1911, U.S. Army airmen conducted experiments with bombsights and even won a prize for accuracy at an international meet in 1912. By 1930 they estimated bombing accuracy to be five times better than that demonstrated in World War I.[10] Nevertheless, American airmen neglected bombsight development. "For many years," the 1933 Air Corps bombardment text stated, "a bombsight has been regarded as merely a gadget which had to be carried. . . . Cheapness and lightness were considered of primary importance instead of precision."[11] The airmen needed a device easy to handle and that could compute: the required course and time of release (deflection and range) based upon wind; the aircraft's speed, altitude, and course; and the ballistic characteristics of the bombs. The lack of stability of both aircraft and bomb-sight caused major problems by preventing precise calculation of all these inputs, that is until developments in gyroscopes made it possible to level the bombsight.

By 1931 Carl Norden had developed an accurate bombsight for the Navy for use against maneuvering ships. The Air Corps showed interest in Norden's invention as a result of tests in 1933 and ordered seventy-eight of the devices. The Norden bombsight increased accuracy, however, the Navy's retention of control over it presented the Air Corps with problems of procurement, technical changes, cost, and secrecy.[12]

The automatic pilot, another product of gyroscope technology, also improved bombing accuracy as it could maintain the aircraft's heading and altitude better than a pilot. By 1936 Norden linked the automatic pilot directly with the bombsight and called the system "stabilized bombing approach equipment." It enabled the bombardier to control the aircraft on the bomb run and reduced bombing errors. The Air Corps adopted the idea and renamed the system "automatic flight control equipment" (AFCE), which better described its use by Army airmen. The engineers did not perfect the system, however, until a Minneapolis-Honeywell modification replaced the mechanical control system with an electronic one that decreased maintenance and allowed inflight adjustments.[13]

The Norden bombsight and AFCE enabled bombers to achieve remarkable accuracy. The Air Corps made extensive studies of bombing accuracy in the late 1930s which indicated that on the average, bombers flying below ten thousand feet put half their bombs within 270 feet of the aiming point and, when extrapolated to 20,000 feet, indicated an error of less than 460 feet.[14] To describe such accuracy, the airmen coined the phrase, "pickle-barrel" bombing, an unfortunate term which would later haunt them. Few reflected that these results were achieved under near ideal conditions: clear skies, with highly-trained, professional crews, and, most important, without enemy opposition. As we shall see, bombing accuracy in combat would seldom achieve these figures.[15]

At the same time aviation technology evolved, so did the strategic bombing doctrine. Although technology and doctrine developed concurrently, there was no direct connection between the two, only a vague, general relationship. War would bring the two together, but not as well as desired.

Strategic Bombing Theories

World War I promised that airplanes would be useful in future wars, a lesson acknowledged by most and doubted by few. The question was therefore how to use this new weapon. The postwar consensus emphasized air power's use as an auxiliary arm in support of armies. Nevertheless, some airmen believed the airplane could do much more and insisted the war had ended before it could be fully tested and their ideas proved. A few even claimed that attacks on the enemy's rear areas could, by themselves, be decisive — a concept that became the basis of strategic bombing theory.

A number of individuals in different countries laid out this theory, the most famous being a Briton, Hugh Trenchard; an Italian, Giulio Douhet; and an American, Billy Mitchell. Curiously, the basic concept of bombing cities and civilians was probably best stated by a civilian, British Prime Minister Stanley Baldwin, who summed up the concept of strategic air warfare in 1932 when he told members of Parliament:

> *There is no power on earth that can protect him [the civilian] from bombing, whatever people tell him. The bomber will always get through. . . . The only defense is the offense, which means you have got to kill more women and children than the enemy if you want to save yourselves.*[16]

Thus, the ideas that formed the core of the strategic bombing theory emerged during and soon after World War I: bombers would get through as no defense could stop them; cities and civilians would be their targets; and these attacks on the enemy's homeland would be decisive. Airmen in numerous countries accepted these ideas.

In the United States, the Army's tactical support requirements, restricted funds, and the public's belief in a "defensive war only" hindered the development of strategic bombing. Yet the theory did develop within the air arm, with the focal point at the Air Corps Tactical School which moved to Maxwell Field, Alabama, in 1931. It occupied this central position because it was the airmen's highest educational establishment and was the place where most of America's top air leaders of World War II served as either instructors or students during the interwar years.[17]

In the early 1930s at the same time aviation technology was advancing at a rapid rate, producing the equipment needed for strategic operations, and thereby giving the bomber temporary ascendancy over the fighter, a distinctive American bombing