Struts, Wires and Braces: 1920s and 1930s Military Bomber Development

by Roger Besecker & Lionel Paul

The L-W-F Owl was a three-engine mailplane with 107-ft wing span. The Army ordered two XNBS-2 bombers based on this design, but they were never built.

Military aircraft in the 1920s and 1930s had a charm and appeal that has all but faded away. There was just something about the open cockpits, struts and the whistle of the wind through wires that not only could catch an imagination but retain it for a lifetime.

Many of these aircraft types were of limited procurement, but it didn't matter, the press photographed these photogenic birds so often that there seemed to be fleets of them. The beautiful and widely publicized Curtiss P-6E was so glamorized that few even realized that only 46 were built.

The 1930s were a period of contrasts in aircraft development. During the first half of the period the bulk of U.S. military aircraft were, technologically, only slightly advanced over the WWI designs. But during the same time civil aviation designers were trying out all sorts of new concepts. Congress had doled out a few precious dollars for military types, and the moss-bound thinkers didn't want to waste them on anything that might be considered innovative. Lockheed, Northrop Gammas, Vultees and the speedy Seversky designs were catching the eyes of the populace, but if it had been left to Congress we would have fought WWII with the Martin B-10, and maybe entered the later stages of the war with the Douglas B-18.

When war clouds began forming on the world's horizons, attention was directed toward the air forces of the world which had surpassed us in technology. The designs of Supermarine and Messerschmitt were innovative and fast. The biplane was fast disappearing. Hawker proved the feasibility of its earlier designs by creating the Hurricane from a biplane, but it was an isolated instance.

Though the biplane was fast disappearing, "last gasp" exceptions included Great Britain's Gloster Gladiator, the USN's SOC Seagulls and Japan's Mitsubishi F1M2, later code named "Pete." The golden age of struts, wires, and braces was for many the era of romantic aviation.

This article describes the evolution of aircraft design, with emphasis on U.S. Army bombers during the late 1920s and 1930s.

The first of the post-WWI bombers obtained in any quantity with the "B" designation was the Curtiss B-2 Condor. Big and slow, the 13 procured barely predated the 1930s. The Condors were rated at 133 mph and featured gun positions behind the wing-mounted engines. It was not much of an advance over WWI bombers.

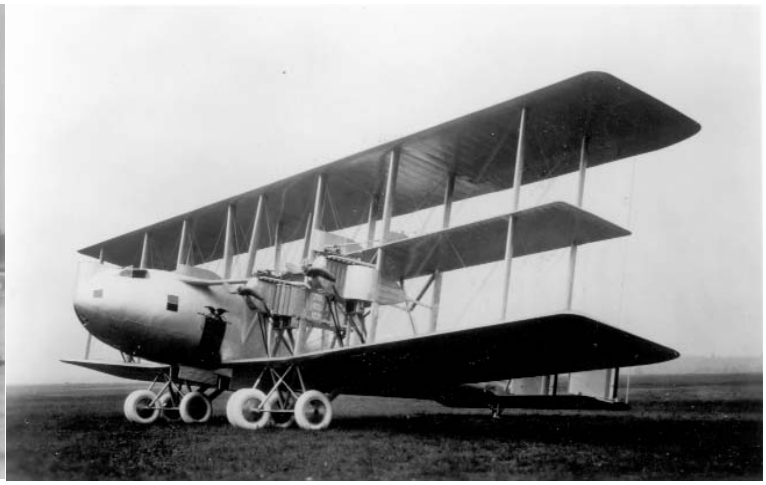
Stablemates of the Condors were the Keystone series. The first Keystone to carry a "B" designation, other than some converted LBs, was the B-4A. A total of 39 B-6As were procured for combat units along with five more for use as service test vehicles. The Keystones were even slower than the Condors and only able to reach 121 mph.

By 1932, approximately 75 of all types of these "bombers" were serviceable. None of these had any appreciable value for combat, despite being able to sink moored target ships!

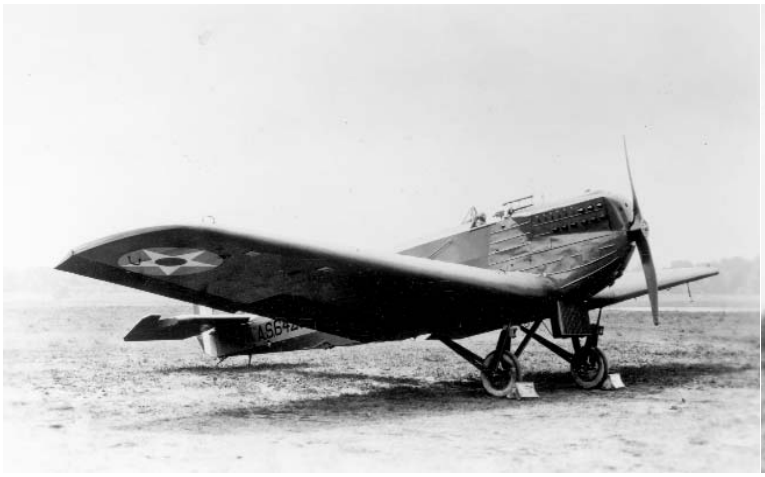
At least the Army Air Corps was getting away from thinking about biplane bombers. Although few in number, the Boeing B-9 started the monoplane trend. Yet it, in essence, was derived from the Monomail, and little credit can be given to the military for its inception. The increase in speed for the B-9 brought performance up to the 180 mph bracket, but it was still slow enough to be a sitting duck for a pursuit pilot, and the B-9 became a test vehicle.

In 1934 the Army Air Corps finally opted for its first "real" bomber, the Martin B-10. A bomber as fast as many current fighters, the B-10 featured enclosed turrets and bomb bay. Yet in a reflection of the financial and political times only 119 B-10s went to the Air Corps. They made many long distance flights, with the most notable being a large scale (for that time)

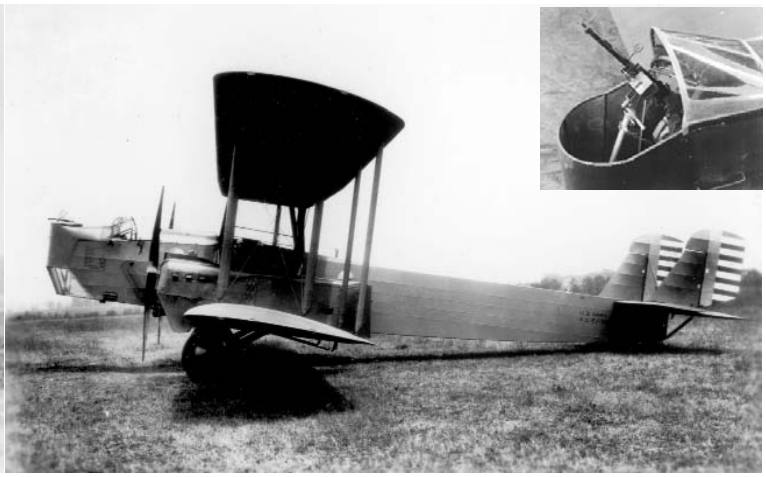
The WWI Martin MB-1 was the first bomber designed in the U.S. Its primary mission was as a reconnaissance scout plane for supporting ground forces with a secondary mission as a bomber.



The Witteman-Lewis NBL-1 (night bomber long distance) was a six-engine, three-wing disappointment. With full fuel and bombs it had a range of 170 miles, half the distance of the smaller NBS-1. This was the only one built.



The 1923 Gallaudet DB-1B (Day Bomber designation) was the first attempt to build a monoplane bomber for the U.S. Army. It proved to be about 10 years ahead of its time. Only two were built and only the DB-1B actually flew.



The 1927 Keystone (Huff-Dalland) XB-1, 27-334, proved to be under-powered and an under performer with only one example being built. Like the Curtiss B-2, the "tail gunners" were located in the aft portion of each engine nacelle, offering a field of fire unobstructed by the tail.

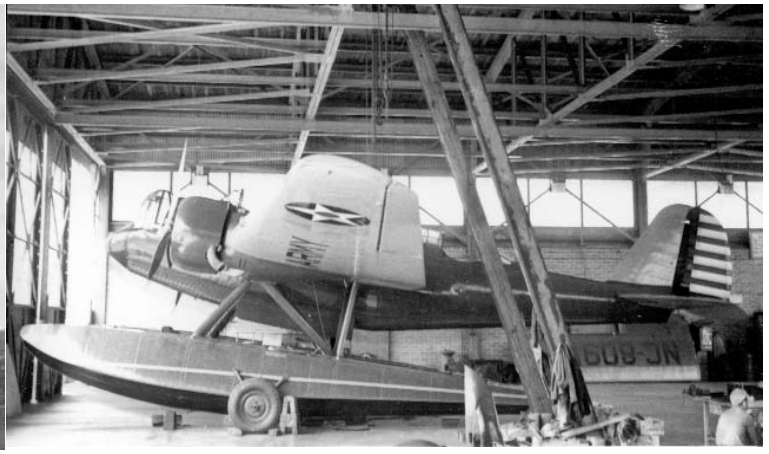
The 1929 Keystone LB-6 was a simple improvement to the LB-5 featuring a modified tail and lengthened fuselage. Variants of the design (B-6A) would be the last biplane bomber purchased by the Army in 1932. Its performance was only slightly better than the Martin NBS-1 of 1921.

Douglas B-7 was also offered as the Y1O-35; failed to merit a production contract in either category. During a tragic few months in 1934, it ended its career flying the air mail. Top speed 182 mph.

The Boeing Model 215 or XB-901 of 1931, developed from the Model 200 commercial transport, led to the YB-9 and ultimately the B-52.

The Martin B-10 was the first all-metal monoplane bomber to go into regular use by the United States Army Air Corps, entering service in June 1934.

The Douglas YB-11 started life as the YOA-5 and was as an amphibious reconnaissance-bomber, intended to act as navigation leaders and rescue aircraft for formations of conventional bombers. Only one was built, but it was used to set two world distance records for amphibians.



Martin YB-12A was adapted to floats to test its feasibility for use in coastal defense work.

The Martin XB-14 differed from the B-10 only in its powerplant that was a P&W YR-1830-9 Twin Wasp. The B-10 and its variants formed the backbone of the U.S. Army first-line bomber force during the mid-1930s.

The Boeing XB-15, 35-277, provided a glimpse into the next generation of bombers. This "plump" yest well streamlined yet well-streamlined aircraft flew operationally stateside as the XC-105 during WWII.

The Boeing XB-17, Model 299, was developed in response to a 1934 Army request for a "multiengine" bomber that was capable of delivering a heavy blow over long distances and able to protect itself.

The Boeing B-17B represented the first production version delivered to regular Army Air Corps groups. A total of 39 were built between 1938 and 1939, and all were relegated to non-combat roles by October 1942.

mission to Alaska. Almost anything was tried to get Congress and the public behind the Air Corps mission. It must have been extremely frustrating to far sighted Air Corps planners to envision going to war with these types because it was becoming quite obvious that we were being surpassed by foreign designs. Some antiquated B-10s soldiered into WWII in recon and training roles.

Somewhere along the line, someone thought "big is best" and the huge Boeing XB-15 was ordered off the drawing boards and into reality. Ordered and delivered in 1937 it predated the Douglas B-18 and Boeing B-17. The eventual contribution of the B-15 was research and, for its day, it filled the role rather well. The B-15 stood little chance of serving as a bomber and, like an old soldier, faded away.

The Douglas B-18 began as a throwback in design. It owed its inception to its forefather, the famous DC-2 transport. Strangely enough, the B-18 was not even as fast as the obsolete B-10, yet it was ordered into production. When WWII started the B-18 also served as a reconnaissance aircraft (with an early version of radar), bomber-trainer and transport.

The sun finally passed the horizon with the appearance and mass production of the B-17. The original XB-17 was built as the Boeing Model 299 and initially civil-registered. Its top speed of 250 mph far surpassed the B-18 and any other bomber types in service, as well as many fighters of the time. Again, the 13 service test YB-17s achieved popularity in the press because of its photogenic qualities, and some outstanding long-distance flights. For once this combination worked and Congress realized that we really did have a viable aircraft worthy of orders.

The day of the biplane was indeed over in reality but still lives in many of our memories. Their last holdout now being the antique aircraft fly-ins.

Between 1937 and 1939 the USAAC ordered 217 Douglas B-18As. B-18s would form the bulk of the bomber force in the late 1930s and early 1940s. Its poor defensive armament, and being underpowered, relegated it to second-line service by 1942.

In 1938, the Douglas XB-19 began life as a design study - the XBLR-2 (experimental bomber - long range). The largest bomber built up to that time, development delays assured that the aircraft was essentially obsolete before its first flight in 1941. The aircraft was used for testing and cargo hauling until being scrapped in 1949.

About the authors

Roger F. Besecker and Lionel N. Paul are long-time members of the AAHS and have made numerous contributions to the AAHS collections. Mr. Besecker passed away in the spring of 2009 after a brief illness. Mr. Paul continues to support the Society. This article was adapted from one that appeared in *Aero "N" Photos*, Vol. 2, No. 1, 1981, edited by Paul and Besecker.