



Above: Bronze plaque of Wong Tsu, Courtesy Museum of Flight

Chinese-born Wong Tsoo was The Boeing Company's first engineer and helped put the company on a sound footing.

# The 1<sup>ST</sup> ...and the Best

By EVE DUMOVICH

A fledgling Boeing Airplane Company got an industry footing in the early 1900s, due largely to the creative talents of its first engineer – a Chinese graduate of the Massachusetts Institute of Technology.

Wong Tsoo, born in Beijing, in 1893, designed Boeing's first mass-produced product – the Model C training seaplane. The airplane went on to become Boeing's first financial success. He also introduced aviation innovations on two continents, and set the stage for Boeing China today. Wong was dedicated to advancing aeronautical science as both an inventor and as an ambassador.

Wong was only 12 years old when he was selected for the Manchu government's Yang-Tai naval academy. Four years later he was one of the first Chinese naval cadets sent to England, where he earned a bachelor's degree in naval architecture and mechanical engineering from Armstrong Technical College. The Chinese government then sent him to the United States and the Massachusetts Institute of Technology to study the new science of aviation.

The MIT aeronautical engineering program was the first

in the country, started in 1914 by Jerome Hunsaker, helped by graduate student Donald Douglas. Its first students also included Navy engineer George Conrad Westervelt, who in 1915 was in Seattle with William Boeing designing the first Boeing plane – the B & W.

Westervelt was stationed back east before it was finished and Boeing formed Pacific Aero Products. He asked Hunsaker to recommend a skilled aviation engineer, and Hunsaker recommended Wong.

"[Wong] is a good man," Hunsaker wrote. "Intends to spend two more years working in this country and wants a chance on aeroplane design and construction."

## Wong meets Westervelt

Wong graduated from MIT in June 1916 and had learned to fly at the Flying Boat School of the Curtiss Co., Buffalo, N.Y. He talked to Westervelt, now aboard the USS *Wyoming* in New York harbor, and then headed to Seattle to work on the Model C, using data from the MIT wind tunnel and research from Gustav Eiffel.

Wong was able to test his theories in the air. According to a Seattle newspaper of the time, William Boeing allowed his em-

ployees to fly the planes they were building.

“Among the most enthusiastic members in the newly established aviation school now being conducted by the Pacific Aero Products Company at the Lake Union testing and trial grounds is a young Chinese, T. Wong ... who in addition to cherishing the ambition to become a proficient birdman, is a mechanical engi-

BOEING HISTORICAL ARCHIVES PHOTO



Boeing and Eddie Hubbard in front of the C-700 with a mail sack.

## The story of the Model C

The Model C seaplane trainer launched Boeing as an airplane manufacturer. It was the first military plane Boeing built and also was the first Boeing plane used to carry the mail. It led to development of the Model 40A mail and passenger biplane, and future success building commercial air transports.

By 1917, World War I was going strong and Josephus Daniels, secretary of the Navy, urged Boeing to hurry production of the Model C. In addition, the Navy needed proof that the Model C planes were as good as Boeing claimed they were.

If they passed tests at the Pensacola, Fla., Naval Base, the Boeing Airplane Company would be in business.

Because the biplanes could not fly that far, two Model Cs were taken apart, packed into crates and shipped by train – accompanied by Claude Berlin, Boeing factory superintendent, and pilot Herb Munter.

They reassembled the little seaplanes at the Navy base where despite 35-mph winds and 4-foot waves, the Model C proved better than anything the Navy fliers had seen. Three months later, Boeing Airplane Company seamstresses and carpenters were rushing to fill an order for 50 Model Cs for a total price of \$575,000.

Boeing began final assembly of the airplane in a shipyard on the Duwamish River he had bought in 1910. By 1918, Model Cs were being manufactured in the timber structure known today as “The Red Barn,” later moved to the Museum of Flight in Seattle.

The Army bought two experimental EA models, essentially landplane versions of the C. The Navy ordered one to be modified with a single main pontoon and small auxiliary floats, known as the C-1F. Boeing built another Model C for himself as the C-700. On March 3, 1919, Boeing and Eddie Hubbard made the first international airmail delivery to the United States when they used the C-700 to carry 60 letters from Vancouver, British Columbia, to Seattle. All 56 Model C-type aircraft were built between 1916 and 1918.

neer and draughtsman,” the reporter wrote.

The Model C first flew on Nov. 5, 1916. It was the second airplane designed by the new company but was designated the C-4 because it was the fourth airplane owned by William Boeing. An improved Model C, with a bigger rudder, made its first flight April 9, 1917. Two weeks later, Boeing changed the name of Pacific Aero Products to Boeing Airplane Company.

On May 22, 1917, a month after President Woodrow Wilson declared war on Germany, Boeing issued Wong a check for \$50.77 for “payment in full for services rendered.” Wong went back to China where he started the first Chinese airplane factory in an old engineering works at Foo Chow.

Conrad Westervelt wrote: “When he [Wong] returns to China ... he will of course be one of the few men in that country fluent in aviation matters and I would look forward to the possibilities of some business in that country through him.”

By 1918, Wong was building the first Chinese floatplanes at a shipyard in Mah-Wei, including the Sea Eagle and the River Bird. During the next decade, Wong produced dozens of aircraft there, helping to establish China’s aircraft manufacturing business.

## Building Sino-American relationships

Westervelt’s words proved prophetic.

In 1928, Westervelt went to Shanghai as a representative of the Curtiss Wright Corporation, working with the Chinese government to found the China National Aviation Corporation (CNAC), and inaugurate commercial air service in China. He selected Wong to be chief engineer in charge of CNAC services and maintenance operations.

By 1934, Wong, now a Lieutenant Colonel, became the first general manager of the Central Hang Zhou Aircraft Company, building Curtiss Hawk pursuit planes and Douglas observation planes.

In that capacity, Wong visited the Boeing Company in Seattle, the Douglas Aircraft Company in California, and the Boeing School of Aeronautics in Oakland, Calif. There is also a record of him visiting the Stearman Aircraft Company in Wichita, Kan. Wellwood Beall, Boeing sales representative to China in 1935, recorded friendly meetings with Colonel Wong Tsou.

## Innovations during wartime

In 1938, when the Japanese invaded the Chinese coastline, Wong’s factory moved inland – first to Wuhan and then to Kunming. In 1940, Wong established the Chinese Bureau of Aeronautical Research (later the Aviation Industry Development Center).

During World War II, it was hard to get materials to Chinese airplanes built inland, so Wong designed and built a unique troop-carrying glider made out of bamboo. By the war’s end in 1945, Wong headed the Aviation Research Academy in China. He spent his last decade teaching aviation engineering at the National Cheng-Kung University. He died on March 4, 1965 in Tainan, Taiwan.

His legacy lives on around the world. Wong’s accomplishments are documented in a display at The Museum of Flight in Seattle and at the Boeing Historical Archives.

His bronze portrait at the Museum of Flight was sponsored by The Boeing Company, the Boeing Asian American Professional Association, the Society of Chinese American Aerospace Engineers, the Chinese Institute of Engineers /USA-Seattle, the Cheng Kung University Alumni Association and the Beihang University Alumni Association. ■