Fong Yee, *circa* 1910 an Early Wireless Expert from Oakland

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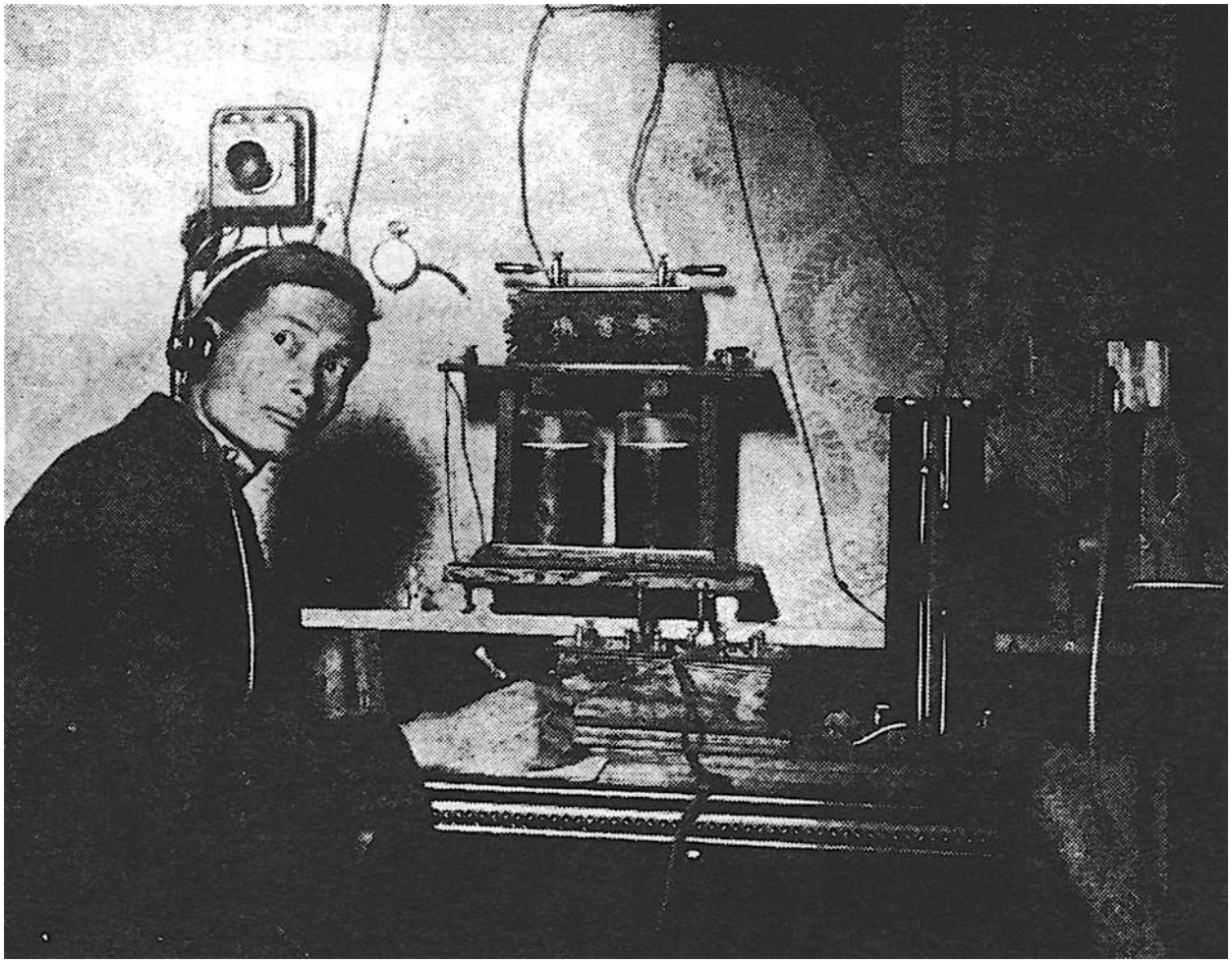
A century ago in Oakland, in the first decade of the 20th Century, lived a young man by the name of Fong Yee. He had migrated from China. In about 1910 he constructed and operated both a home wireless station (see photo below) and a well -regarded portable radio station for field use. He also designed, built and flew one of the first aircraft on the West Coast (see photo below). According to Internet sources, after he brought his aircraft design to China, many Chinese, especially on the mainland, saw Fong Yee as "The Father of Chinese Aviation."

Just as the Wright Brothers and others perfected manned flight around the turn of the 19th Century, Marconi and others perfected the first wireless telegraphy apparatus in the early 1900s. Vacuum tubes, transistors and other key electronic components came much later, in some cases many decades later. The first wireless transmitters sent

Morse code signals. They did so by creating a high-voltage and high frequency AC spark across a gap, from an induction coil. This device is known as the spark gap transmitter. A short spark sent out a dit (dot), a long spark sent out a dah (dash), for the Morse code letters of the words in the message.

The frequency at which the earliest systems would transmit could be affected by altering the length of the antenna, its height, and the amount of wire in the antenna. These big antennas often acted as "capacity hats" to permit the lead-in to radiate at a lower frequency. Soon inductance and capacitance circuits in the output determined the frequency. Then the length of the antenna was adjusted to the wavelength (frequency) of the output, for resonance and higher output. Generally lower frequencies required longer antennas. The ingenuity the pioneers of the early wireless radio communication allowed them to overcome the technological obstacles of the day and paved the way for our modern communications systems.

In the nearby photograph of Fong Yee's wireless station, an induction coil with a spark gap on top of it is seen in the center top.

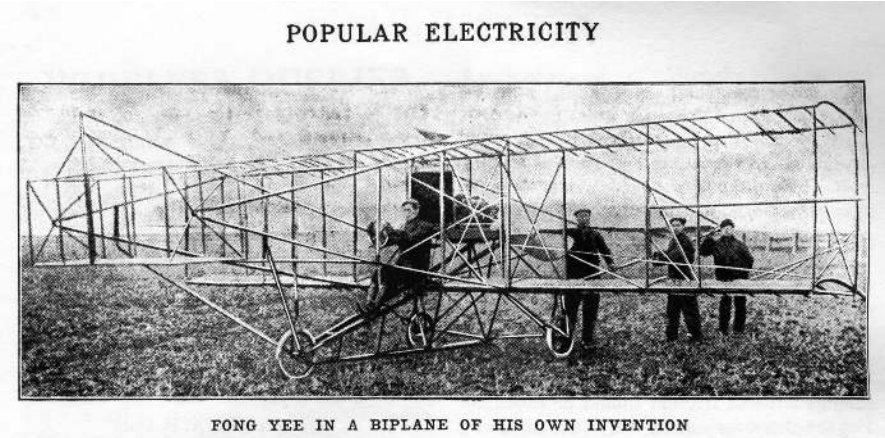


Fong Yee photo June 1911, from Popular Electricity

Two leads go up to an antenna. The two cylinders below that are Leyden Jars, large capacitors used to build up the strength of the spark. By his right hand is a receiver, probably a crystal set with a galena or carborundum detector. He wears earphones to listen to the signals. To

the right of the receiver is a large vertical tuning coil with two sliding taps to vary the inductance. This suggests low frequency operation. Generally these stations operated at one megahertz (1 MHz) or below, in the present AM broadcast band. The international marine distress frequency was 500 KHz. Fong Yee's station is compact and state of the art for the day.

Fong Yee also built and improved a Curtis model biplane and taught himself how to fly it. He flew it in the East Bay. (See photo below). On September 22, 1909, Fong Yee was the first Chinese man to fly in America and he made the news headlines of the day. He had constructed and improved upon the Wright's biplane and taught himself how to fly. June, 1911 photo (Oakland, California):



FONG YEE IN A BIPLANE OF HIS OWN INVENTION

Principals in China called him back to China in 1911 for technical guidance, at the time of the Sun Yat Sen revolution. The nearby photos come from *Fong Yee, the Wireless Expert,* Popular Electricity (Vol. IV, No. 2), June 1911 (see resources, below).

Fong Yee's exploits gave rise to the legend of "Dragonwings" in the Bay Area Chinese community. To this day there are recollections in the Oakland Chinese community of an aviator and radioman of long ago, according to George Chong of the Cathay Amateur Radio Club. A local author wrote a book about him: Laurence Yep, *Dragonwings* (Harper Collins, New York, 1975).

Mr. Yep also wrote a play of the same title. The Berkeley Repertory Theater performed it to good reviews in 1992. A photo from the performance appears below.

BY GARY REYES/THE CHRONICLE

Chris Tashima and Radmar Agana Jao (right) in Laurence Yep's 'Dragonwings'

Photo by Gary Reyes for the San Francisco Chronicle, Dec. 17, 1992, page C3.

Fong Yee's name in English is also reported on the Internet as Fong Joe Guey, Feng Ru, Fong Yue and variants. He died in a crash of his airplane in China in 1912 at the young age 29. In mainland China, Fong Yee is widely considered "The Father of Chinese Aviation." With regard to wireless, below is the text of the 1911 article in *Popular Electricity* noted above.

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FONG YEE, WIRELESS EXPERT

An interesting sign of the times, connected with the awakening of China, especially in military matters, is the departure of Fong Yee, aviator and wireless expert, from San Francisco to Pekin.

Fong Yee has been summoned by the Imperial government to demonstrate his improved biplanes before the officers of the Chinese army, and his flying machine, which is said to be an improvement on the Curtis model, will probably be utilized in that country.

Fong Yee is also the discoverer of a wireless telegraph apparatus for field use, which is said to excel in compactness and efficiency. This instrument he perfected in his laboratory at Oakland, near San Francisco, where for the past three years he has labored incessantly and has aroused the wonders of many American experts who have seen his wireless apparatus in actions.

During the recent aviation tournaments in Los Angeles and San Francisco, Fong Yee was a contestant for honors and made some remarkable fights. Previously he had demonstrated his improved biplane in a number of successful cross-country trips from Oakland, where the machine was built.

Not long ago Fong Yee quite unexpectedly received an offer from the Chinese government to instruct army officers in the mysteries of aviation

and wireless telegraphy. It is also believed that Prince Tsai Suin, head of the Celestial army, has made the young San Francisco inventor a flattering offer to remain in China, superintend the manufacture of the apparatus he has invented and restrict the secret of their construction to China. If the Fong Yee biplane and wireless apparatus are successfully demonstrated at a series of army maneuvers soon to be held near Pekin, Fong Yee's fortune is made and China may take a certain precedence in two important branches of military science.

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Resources:

Primary: *Fong Yee, the Wireless Expert,* Popular Electricity (Vol. IV, No. 2), June 1911, reprinted in *High Power Wireless Equipment* (Lindsay Publications, Bradley, IL, 1988) at 94; and

1. http://en.wikipedia.org/wiki/Fung_Joe_Guey
2. Bart Lee, Wireless Comes of Age on the West Coast, 24 Antique Wireless Association Review 241, 245ff (2011)
3. http://californiahistoricalradio.com/CHRSPix/BartWestCoastWirelessAsPublished.pdf
4. http://en.wikipedia.org/wiki/Spark-gap_transmitter
5. http://www.airspacemag.com/history-of-flight/The_Father_of_Chinese_Aviation.html

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