

## The *DeForestrons*

-- The CHRS Discovery of **The World's First Tube** (sort of) and documenting a BIG one.

By Bart Lee, K6VK, A CHRS Fellow in History

Many new tubes arrived at the California Historical Radio Society's RadioCentral in Alameda on Saturday Dec. 30, 2017. Denny Monticelli and crew -- sharp eyes all -- had spotted a couple like this one while cleaning out old CHRS storage. Its box claims it to be the "World's First Tube." The trademark "DeForestron" graces the box.



A website collects and publishes tube boxes, true radio (& TV) ephemera: <http://pax-comm.com/pa01057.htm>. This website displays similar De Forestron boxes.

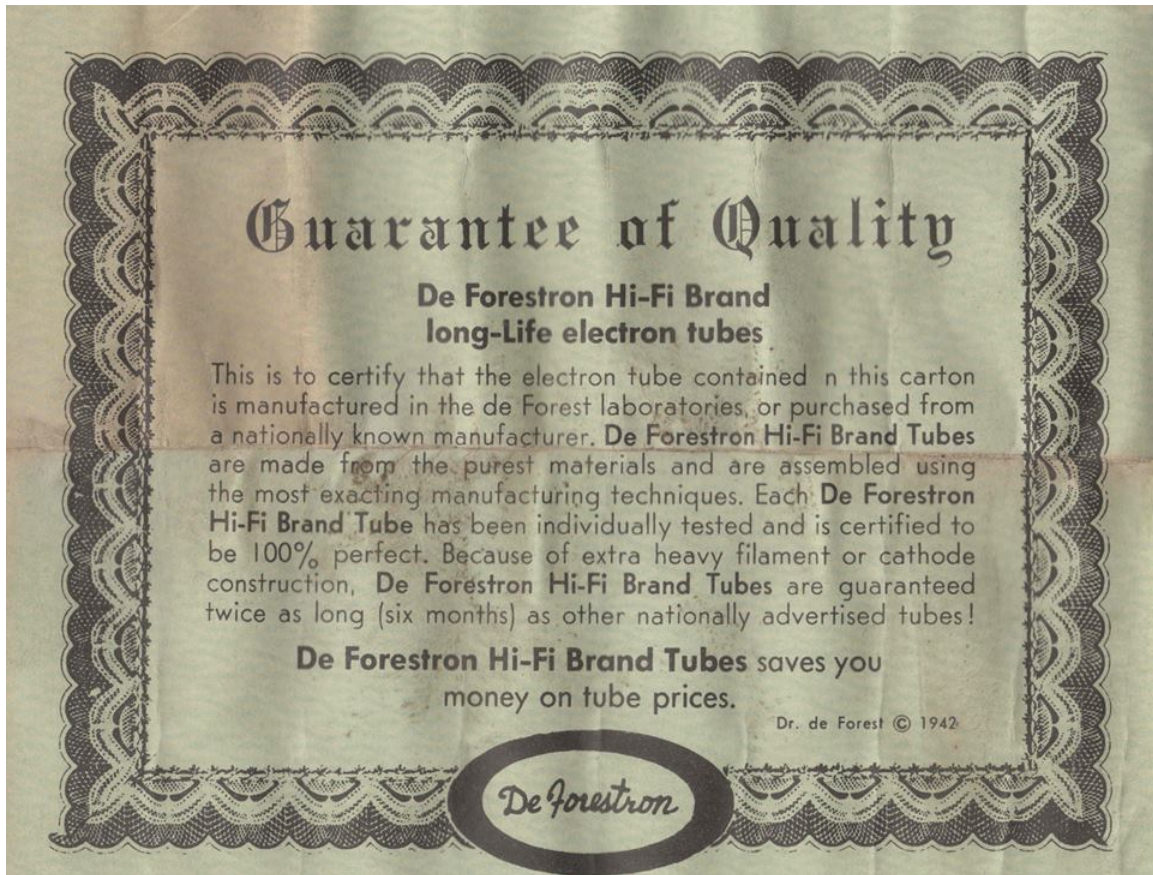
One shows a San Jose, California location for a brand or store "Tesco" on the box flap. So maybe the De Forestron was a California private label.



Robert Swart shares an interest in preserving the ephemera of old vacuum tube boxes. (We have preserved in the archives a number of them, laid flat in acid-free sleeves). He brought them over to the library. Upon examination, the tube inside is marked DEFOREST but nothing else.



The CHRS tube is a 5AQ5 TV and HiFi era tube, so maybe it isn't the actual World's First Tube, but a late descendent of De Forest's Audion of 1906. The 5AQ5 like the 6AQ5 sits in a seven-pin "miniature" glass envelope. Primarily, the 5[&6]AQ5 functioned as an audio beam power amplifier. The box claims "Hi-Fi Quality performance" (TV sets also used them).



A certificate shown above appeared spindled in the boxes. It bears the copyright notice: "Dr. de Forest © 1942." It asserts that the tube is made "... in the de Forest Laboratories, *or purchased from a nationally known manufacturer.*" (Emphasis added). By the time this 5AQ5 got made, it had to be a private label because De Forest tube manufacturing was long gone, even in partnership with RCA.



On the back of the certificate is a “Tube Exchange Form” requiring the reason for sending it back, and a serviceman's signature. But it doesn't say to whom to return the tube. Presumably the radio serviceman knew. Thus, only tubes bought from legit dealers could be returned. Bootlegging tubes and price-cutting were endemic in the business at the time.

In 1931, Lee DeForest lent his name (or perhaps sold his name) to the DeForest Training School set up by his friend Dr. Herman DeVry of Chicago. This in 1953 became the DeVry school. Perhaps De Forest similarly lent (sold) his name to whatever company made DeForestron audio and TV set tubes. But it is a mystery.

Lud Sibley, AWA, has helmed the Tube Collectors' Association for many years. He responded to a copy of this note:

Haw! That's ironic. By coincidence, I've just made up two composite photos of tube cartons from obscure brands, from the honest regional sellers (Dalytron) to the bottomfeeder used-or-factory-seconds operators, for use as “Tube Collector” covers... I have a DeForestron carton somewhere (from a 35W4) but hadn't seen the rahrah guarantee certificate. Thanks! Big Lee, wherever he is, is smiling. Lud

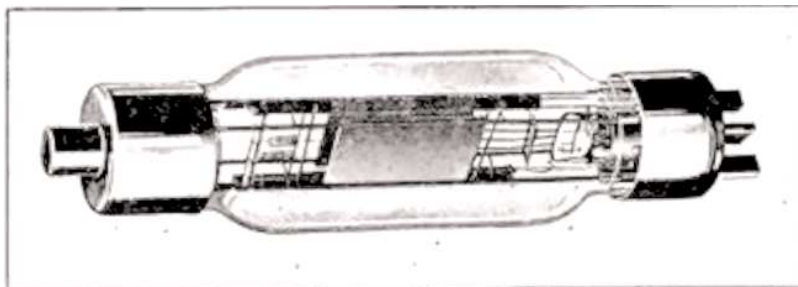
It may be that that certificate (“...(c) 1942”) dates from the time when one or another DeForest company or a legit successor firm did actually make and sell its own vacuum tubes. Perhaps it just got reprinted for this 1950s reincarnation of the purported DeForest vacuum tube line of DeForestrons. The need for a doubly-signed return slip is consistent with DeForest companies' earlier high-bar policies about taking its expensive tubes back. This rare certificate will also reside in the CHRS archives.

Another odd DeForest tube has recently raised some issues. This is a big one. Jim Theilemann, K6SV, of the Palo Alto Amateur Radio Association, inherited an unusual bottle. He wrote Mike Adams:

“At some point in the club's past, a few members cleaned out the [estate] QTH of a SK. Among the items was the Lee de Forest tube, picture attached. As secretary of the club I ended up with it when the previous custodian moved out of state.



“Being curious, I did quite a bit of surfing to try and learn more about it which also lead to learning more about Lee. I was completely unsuccessful in learning much of anything about the tube. I haven't found a picture of another one. I did stumble on the "Journal of The Franklin Institute" from July 1920. Low and behold on page 34, image attached, there was the tube! It's the only reference I've been able to find of it. “



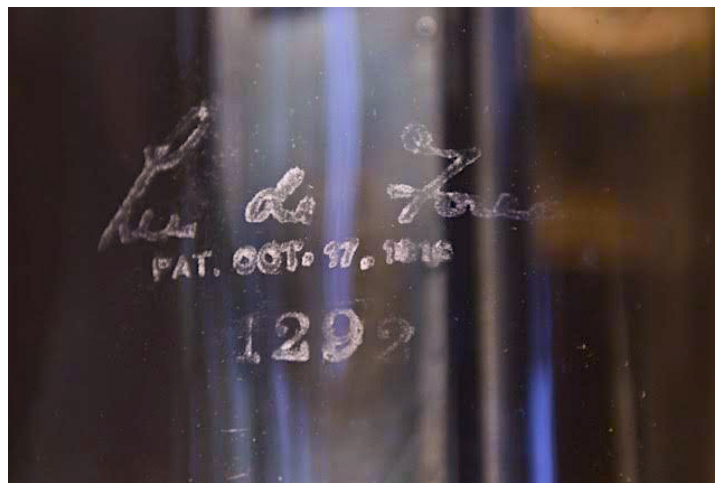
[Labeled as] “1 Kw oscillion”

Mike passed the inquiry on to Joe Knight, CHRS, AWA, a most knowledgeable collector and documenter of vacuum tubes. Joe responded:

“It is indeed an early post-war based (socketed) version of the DeForest 1KW radio transmitting tube. During the war they made the same 1KW version in an unbased version, with flying leads. It had the identical plate construction you see in your version. These were used in the DeForest commercial transmitters they were selling at the time, often in a pair.

“I have both versions - the based versions are rather scarce and make for a great display tube. Later they made other numbered tube versions with nice name brass plates attached to the base. All the same 1KW size. Remember, at this time DeForest himself had nothing to do with the Company - he had sold it off along with his name.

“The etched DeForest name on the glass gives it the nice authentic touch. Some even had de Forest's name stamped on the plate structure. The number below it is the tube's serial number, usually only three or four digits, so these not ever made in massive quantities. The number helped them to match up a similar performing replacement tube when changing tubes in a parallel use where both tubes had to closely match.



This is the base of the PAARA tube,  
Patent date Oct. 17, 1916, serial number 129

“Usually these are worth a few hundred dollars, depending upon condition and visual clarity inside and if the filament still good. Remember, these were retired from use only because they either failed or were not performing well, so most will look rather used as expected. Many collectors are not into large tubes - exception, anything DeForest is still much desirable.”

These tubes got around. As a 2Q15, one or more went to work for the Australian telephone enterprise in 1921. Museums Victoria hold one and displays it on its website:



Item ST 15925 Electronic Valve -  
De Forest, Triode, Type 2Q15, circa 1921  
<https://collections.museumvictoria.com.au/items/369307>

This example carries an engraved plate on its top cap; according to the museum:

“Text on display label. Bulb: (signature of Lee De Forest)/PAT. OCT.17 1916 /639 (the last digit is indistinct)

“Top cap: De Forest Oscillon [sic]/(Licence statement)/(Tube data) Label riveted to top cap (see note below): DE FOREST OSCILLION/PAT. NOV. 7. 1905/LICENSED ONLY FOR THE USES/SPECIFIED IN CONTRACT OF SALE/TYPE 2Q15/FIL.VOLTS 15 FIL.AMPS 9/PLATE " 1500 PLATE " 1111(?)/DE FOREST RADIO TEL. & TEL. CO. N.Y.

“Note: All of the numbers on the top cap label, apart from the patent date, are stamped into the label. In particular note that the 'Q' of the type number is printed on the label but both the '2' and the '15' have been stamped on.”

The museum’s interpretive text for this item reads:

“Summary[:] Type 2Q15 oscillation valve. Filament volts 15, amps. 9, plate volts 1500. Made by De Forest Radio Telegraph & Telephone Company, New York, United States of America. This type of tube was first used in Australia by the Post-Master General’s Dept in 1921, according to the donor, but Marconi valves took their place later.

“Oscillon was the term DeForest used for transmitting valves designed to be used as oscillators. No data for this particular valve has been found but it looks the same as the type 1G Oscillon, which was rated at 500 watts input power (as illustrated on page 130 of 'Tyne, Gerald F. 1987. Saga of the Vacuum Tube').”

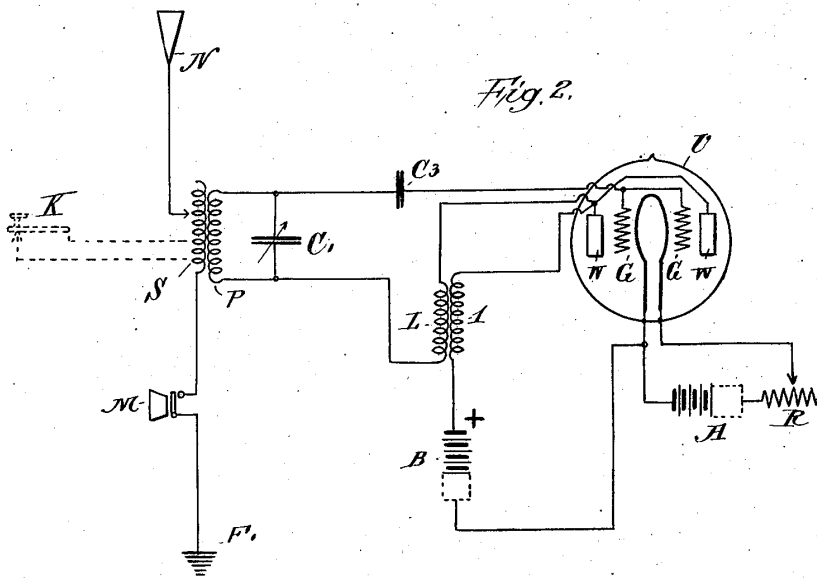
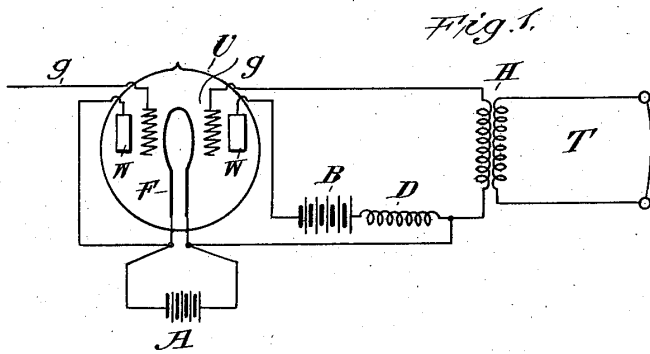
De Forest got four related patents on October 17, 1916. They show him to be seeking ways to transmit voice as well as telegraphy through the ether. The circuits show an oscillator as a transmitter, modulated by a microphone in the ground lead (as in prior de Forest circuits). The fundamental patent drawing appears below:



L. DE FOREST.  
 OSCILLATION GENERATOR.  
 APPLICATION FILED, DEC. 28, 1915.

1,201,273.

Patented Oct. 17, 1916.



Lee de Forest Inventor  
 By his Attorney Samuel R. Darby

A hundred years later, Lee de Forest's inventions continue to interest historians, curators, archivists and collectors. (de K6VK)