

01 - The tube collection: Early types, from 1915 to about 1930

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Early tubes can be very useful as a comparison to better understand the dramatic evolution of the electronic science in less than fifty years. The most interesting tubes in this section are the ones made during the Great War, as the sample of '[Audiotron](#)', introduced in 1915. Other American WWI tubes include types developed for military applications, [VT-1](#), [VT-2](#), [TB1](#), [CG-1162](#) and its equivalent VT-14. In these types we can see the evolution of electrode assemblies in order to increase their stiffness and to improve their reliability in case of rough handling.

A major evolution of electrode system, with metal brackets clamped on glass tubulations to hold electrodes in place, can be seen in some British power tubes, the [VT30](#) and the [VT31](#), the [AT50](#) and the [MR1](#). Their internal structures look very similar if not the same to those illustrated in the book 'Thermoionic Tubes in Radio Telegraphy and Telephony' written by the pioneer John Scott-Taggart in 1921.

Among the early post-war production, there are some quite interesting tipped types well illustrating the evolution in mechanical and electricals design, as the Zenith Monza [DV-2](#), the Philips [D-II](#) and the [WD12](#). The collection also includes a rare very early double-ended screen grid tube, the Cossor [S.G.210](#), a low-power variant of the Marconi-Osram S625 introduced in 1926. Also quite rare are two neon bar tuning indicators, the [3184](#) and the [RR145V](#), both in use before the introduction of the so called 'magic eyes'.

The three Raytheon helium rectifier, [B](#), [BA](#) and [BH](#), are not rare, but they were the first electronic products of the young firm, successfully introduced from 1925. The same name of the company, an euphonic neologism for 'ray of gods' referring to the blue light of ionized helium, derived from the B rectifier.

Other quite rare samples, well representative of the human ingenuity, are the [C100A](#) and the [C100D](#). Actually they were developed by Amperex to Collins specifications, to be used as gridless local oscillator in transmitters made around 1936. The amazing aspect is that their principle had been patented since 1915 by Dr. Robert Goddard, the same known for his works on rockets.

Worth of notes are the Kellogg exhibits which can be dated around 1925, some of the early tubes with AC powered heaters, [Type-20](#) and [401](#). Connections to heaters come out from the top to simplify the conversion and the rewiring of old battery radio sets to AC operation. The conversion to AC supply was performed replacing the old filamentary tubes with the new Kellogg ones and adding a battery eliminator, maybe equipped with a Raytheon gaseous rectifier.

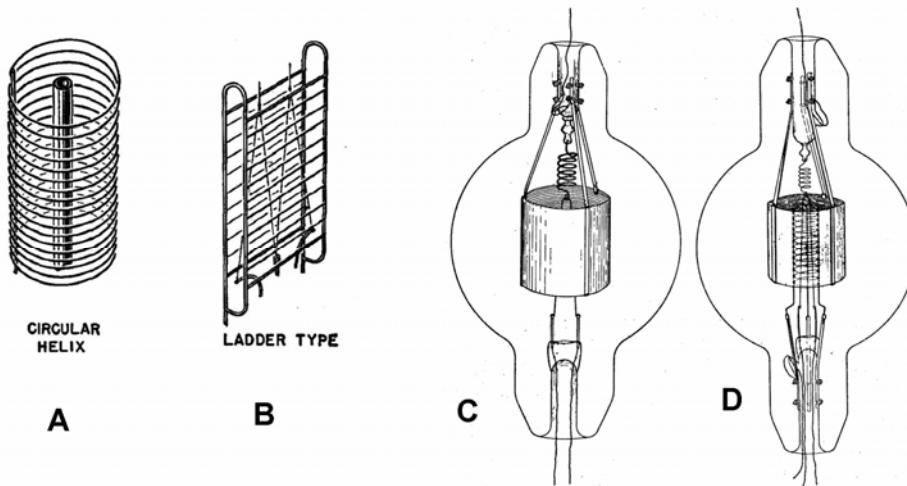


Fig. 1 - Grid shapes of WWI receiving tubes and construction details of transmitting or power tubes. The circular helix grid 1A, even with no side supporting rods, was widely used for years, as in the American VT-14, in the French style [TM15](#) and in the British [VT13C](#). Ladder type grid, 1B, was distinctive of many Western Electric filamentary triodes, as [VT-1](#) and [VT-2](#), and was retained well in the sixties for its ionization vacuum gauges, as [D-79510](#) and [D-79512](#). The electrode assembly devised by J. Scott-Taggart, with three rods fastened to the top glass stem to firmly hold the anode cylinder, can be found in the two-electrode [MR-1](#) rectifier, in the power triodes [AT50](#) and [VT30](#) and even in the transmitting tetrode [VT31](#).



Fig. 2 - Early tubes from the Great War to the twenties. A - General Electric [VT-14](#) general purpose amplifier, about 1917-1918. B - Western Electric [VT-2](#) triode delivered to Signal Corps from 1917. C - General Electric [TB1](#) kenotron or diode, about 1918. D - Philips [D-II](#) detector or amplifier, around 1921, still retaining the horizontal electrode arrangement of the French TM. E - The [Audiotron](#) from Cunningham was sold from the mid 1915 in the single filament version. The double filament version, as the one in the collection, was advertised in August 1916. F - [MR1](#), a British power rectifier in use from early 1919. G - The [A.T.50](#) was a very fine power transmitting triode made around 1920. H - This Cossor [S.G.210](#) is one of the double-ended screen grid tubes appeared around 1927. (Click the image to enlarge)

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