THE SAGA OF THE VACUUM TUBE

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Part 15. The early growth of the amateur fraternity, with the development and manufacture for public use of the Audion and crystal detector.

The amateur fraternity was small during the first decade of the twentieth century. Equipment was crude; progress was slow and beset with difficulties. Little factory-made equipment was available and reliable construction information was difficult to obtain. This situation was partly alleviated by the International Electrical Congress held at St. Louis in 1904, which became a clearing house for information along wireless lines as well as other branches of the electrical art. At this Congress papers describing recent advances in theory and practice of wireless were presented by John Stone Stone, Lee de Forest, J. A. Fleming, and others.

The de Forest Audion and the crystal detector both appeared in 1906-7. The crystal detector was introduced almost instantly by the amateur. It was simple, cheap, and sensitive, and in time came into almost universal use. It made the amateur receiver really usable. The Audion was expensive and short-lived, and required expensive auxiliary equipment. A dry-cell anode battery and a filament storage battery were needed. Small dry cells were short-lived and the problem of charging and otherwise maintaining a storage battery was not to be taken lightly. The Audions varied greatly in their characteristics, not only initially but with use. Hence they were not widely used.

In the early part of the second decade a number of factors tended to promote the use of the Audion. The ranks of the amateur fraternity were swelled by many hundreds of "teen age boys (and older ones as well) whose interest in this fascinating avocation had been aroused by newspaper tales about rescues at sea. Stories of the rescue of survivors of the ill-fated S.S. Republic and S.S. Titanic, and the part played by wireless in the rescue work, all aroused widespread interest in this newest branch of the communications art.

Once the desire was aroused, the ingenuity of Young America was called upon to provide the necessary equipment for the home station. The family rolling-pin disappeared from the kitchen only to reappear later, disguised by the application of a layer of wire, as a tuning coil. Bits of wire, scraps of metal, odd chunks of wood, all provided grist for the mill which turned out the wireless set of the eager constructor. Practically everything except the headset could be made in the cellar workshop, and it usually was. It was the era of "haywire" and home-brewed apparatus, even for elaborate stations.

By 1915 the Audion was much better known, particularly on the West Coast. The opening of the transcontinental telephone line and the publicity attendant thereon, the Panama-Pacific Exposition with its displays of wireless equipment—both tended to promote knowledge of this device. It became the ambition of almost every embryonic Marconi to possess an Audion.

The problems of obtaining and main-