Tube of the Month

AUDION

The First Triode

In 1880, Thomas Edison performed an experiment with one of his new light bulbs. He added an extra wire to test the properties of the deposits that were darkening his bulbs. In the deposit there appeared to be a shadow of the filament wire. He was able to detect a current in the wire. At an electrical exposition, Edison presented this phenomena without suggesting any possible uses. An attendee from England was very interested in the bulbs and conned Edison out of some samples. In the next few years, John Fleming became aware of these bulbs and the experiment and tried using AC voltage. The added wire had a DC voltage and the vacuum rectifier was born. When Marconi needed better detectors for wireless gear, Fleming tried the vacuum rectifier. The Fleming valve was an improvement and it was patented for use as a detector.

Back in America, Lee de Forest was trying to make a living in the new wireless industry. He tried many circuits including Fleming's valve. His company eventually was going broke and his creditors were about to shut him down. One of the last experiments he wanted to try was to take a bulb and add a small square plate separated by a zigzag wire between the plate and the filament. De Forest picked up his new bulbs from the glass blower after a meeting with his creditors. They had liquidated his company, fired him as Vice President and gave him $500 and his patents as severance.

A few weeks later, he had a high school student test the new bulbs. The tubes were a big success and a new patent was applied for. This was January 1907. Over the next few years, de Forest tried different versions of his AUDION. The tube had a low vacuum and was gassy but it did a fair job as a detector. He marketed the tubes to hams while he tried for military and commercial contracts. Some audions were better than others and could be bought at a premium price. Since they had no idea what affected performance, they couldn't predict what would be a better tube. The plates were cut with scissors that were soldered to a wire. The grid was a copper wire wrapped around some nails on a board. It worked and was the first triode. De Forest could never get it to amplify where the real money was.

This example was made about 1909 and had two plates, grids and filaments. The filament was only good for 100 hours at best so an extra filament was added with its own wire. When one filament was burned out, the wire could be wrapped around the screw base and you were back in business.

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