

By the time I joined KDKA in 1927, just out of broadcasting school, the station was already established and had a big following. At that time, we were using water-cooled tubes crystal controlled. My job at KDKA included building the microphones and amplifiers for the Westinghouse stations.

We had to build the equipment in those days and since there wasn't too much available we also built our microphones, including our own carbons. We used our condenser mike to a great extent. We also used the arc microphone in our studios, which we called the Globe Mike. It wasn't too steady and it was too impractical because it needed 3,000 volts and we used to get knocked around when we'd cross the wrong terminals. The condenser mike was our standby and that was long before RCA came out with the three-tube job. We also built several different consoles and each Westinghouse station had a different one operating.

One time when President Calvin Coolidge was set to speak at Carnegie Institute on Founders Day we built a brand new condenser mike for the occasion. We had it all set up and were mounting it when they sent it back to have a special mounting drilled for it. At the lab, they drilled a new mounting and the fellow who drilled the mounting forgot about the length of the drill and drilled right into the output transformer without knowing it. Sent back to the scene, we were going for the pickup and nothing happened. Fortunately, we had a beat up carbon mike standing by and we had to pick the president up on that instead of the brand new condenser.

We did a lot of remotes in those days, things which stations are just now emphasizing again, like sports broadcasts and on-the-scene news broadcasts. Herbert Hoover did his first broadcast when he spoke at the Duquesne Club in Pittsburgh, and when we went to late night broadcasts, Will Rogers appeared on the air with the Ziegfeld Follies. Church broadcasts were often on and we also did a broadcast from the stage of the Grand Theatre.

In the studio, we had a lot of acoustical problems, mostly caused by our trying to deaden the sound too much. Knowing the reverberation problem was one thing; solving it was another. It wasn't until many years later that broadcasters exchanged information; there really was no way to really communicate back and forth about our special problems with anybody who might know the answers.

Part of the problem was the equipment we were using. We used, for example, a carbon mike which used a stiff paper as a diaphragm. This two-button mike was pretty good in itself for giving good quality, but the speakers, for example, were far too resonant. The sopranos we used to broadcast sounded terrible and finally, we avoided using sopranos on our broadcasts.

In our remotes, we used to have several dance band pickups from local hotels and when broadcasting an orchestra we would try to get the sound with one mike and if they had soloists, with two or three. We began to learn how to phase the mikes at that time. We also had staff entertainers like "Victor Saudek and his Little Symphony" and Pianist Charley Hemp who drew great popularity because of his broadcasts.

Westinghouse Broadcasting's history actually goes back before the first world war when Dr. Frank Conrad of Westinghouse had one of two stations on the air during the War, 8XK

(the other was 9XM) which was used as a development hook for some radio equipment for the British and American armies. After the war, Dr. Conrad continued to play around with radio giving broadcasts on a regular basis starting in October, 1919. It drew considerable response around Pittsburgh, encouraging Dr. Conrad. A year later, he and Westinghouse decided to use the broadcasting of the Harding-Cox election returns as "Opening Night" for KDKA. There were a lot of receivers that had loudspeakers, surprisingly enough, and these were set up at Pittsburgh's Edgewood Club and other locations around the city to broadcast the returns. They set up the transmitter at the Westinghouse plant with Dr. Conrad ready to operate the station from his home should trouble develop. They were on practically all night and KDKA has been broadcasting every day since.

Soon we had three stations, KYW in Chicago, WBZA in Boston and WBZ in Springfield. The Boston station was a satellite to the Springfield station at first tied to the same frequency by a landline. We started off using 57 Kc and then dropped it down to 27 and dropped that down further to 13½. The main transmitter was in Springfield, but couldn't be heard too well in Boston until we added the landline satellite. But since there wasn't too much talent in Springfield, we soon put the big transmitter, 15 kw, in Boston and moved the smaller transmitter, 1 kw, to Springfield. That was in 1931.

In those days, the air was pretty clean and we could be heard over pretty far distances. We were even heard in foreign countries, according to the reception reports.

Our test lab at KDKA developed new equipment and techniques as we went along, such as microphones. The early microphones needed a non-microphonic tube. We hadn't produced one then, but were using the General Electric GEPJ2 which was nonmicrophonic and had been developed for use in railway signals. We had considered the Western Electric 250A, but it was too microphonic for our use. The GE tube was a big one, the size of its No. 210, and it was used in a black box amplifier for the condenser mike.

We were continually changing equipment as progress demanded. Transmitter designs began to change. We then went from the straight vacuum rectifier, relatively inefficient because when you went up in power, there was a significant drop in it, to the mercury vapor, to mercury pool-type rectifiers which we used for a long time before the mercury vapor tube was available. That was in the late twenties.

In the earlier days, we used motor generators to get power, 3000 volts, and we used them at the big power installation we installed in Saxonburg. At Saxonburg, we developed a 200 kw tube with a water-cooled grid and everything else, which we called the AW 220. That was all DC filament buss which used two big rectifiers, one a 1200 kw rectifier and one 400 kw. We used six-phase mercury pool-type rectifiers which you had to tilt to start the arc within the tube. Once you got the arc started it would go to the rectifier terminals where an auxiliary anode would start the arc. The whole thing looked like an octopus turned upside down with the mercury pool at the base of it and the arms the electrical anodes. The mercury type rectifier is still used today in many applications. Many have used the mercury arc type as a standard type rectifier for

industrial purposes. To apply it to highest voltage was a problem, however. This six phase rectifier gave us a great deal of use before the mercury vapor rectifier became the standard broadcast rectifier.

We then went to dry disc rectifiers. The mercury vapor 857B was standard for the 50 kw transmitter and later very small ones of these types were developed for the receivers. All the transmitters used this system before they went to dry disc which is a comparatively recent development; we did the tests on them at KDKA, too.

We also installed a copper oxide rectifier for the 50 kw transmitter. It may be of interest to know that the present KDKA transmitter was the first AC all air cooled transmitter, the HG 1. We built the first air-cooled, the first dry-disc rectifier. When the transmitter first came in we didn't have a high voltage rectifier developed so we installed the 857B rectifier at that time, since it was standard, then we went to dry disc, and then to silicones and other types.

We built the first AC transmitter on the big filaments when we set up KYW in 1934. We had moved KYW from Chicago to Philadelphia at the time and we decided to go all AC to get the noise level down. We then dropped the filament generator and five years later, in 1939, KDKA went a step further and did away with water cooling. Then we went a further step to make

the VDDGI which was up to 3,000 volts — and used all dry disc rectifiers.

Despite what people may think, we had better sound in the twenties than what was available on phonograph records. We used to play the Victor Red Seal records exclusively in those days by placing a microphone in front of the speaker. At that time, KDKA didn't have electronic recording but instead used a direct acoustic system. But when we broadcast live, we got better sound than the records gave. It wasn't until the late twenties or early thirties that the electronic recording system was developed for broadcasting. Broadcasting was always ahead of records then, but the early receivers unfortunately didn't have the audio range in their speakers so they couldn't pick it up. And the audio amplifiers used in the radio receivers then were not giving the power range either. KDKA did have one of the earliest magnetic pickups and in a photograph of the studio on the night of the Harding-Cox election returns, there's a magnetic pickup on the turntable.

I remember KDKA's early years fondly and am grateful to have been a part of it; more, I'm grateful to have remained with the company and shared in its growth. ■

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