# With the West Coast Televisors

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***A brief description of what has been going on out at the West Coast, and why they have led the East with telecasts.***

THE Radio Corporation of America purchased the patent rights to television synchronization methods and apparatus from Harry R. Lubcke, Director of Television for the Don Lee-Mutual radio network. This had to do with the maintenance of television receivers in step with the television transmitter. That these keep step is necessary so that the scanning beam at the receiver must at all times be in the same relative position that its transmitting counterpart occupies in the transmitter field of view. The patents cover means utilized at both transmitter and receiver. At the receiver a device operates to separate the synchronizing pulses from the composite incoming signal which contains both image and synchronizing pulsations.

This does away with the old theory that it was necessary for a receiver to be connected to a city power line so as to synchronize the transmitter to it. And to prove his theory practical, Mr. Lubcke gave a demonstration to a plane load of newspapermen. He flew them high above the city of Los Angeles and gave them a view of clear image reception on his receiver that astounded all skeptics. He definitely proved that with his apparatus there was no need for transmitter and receiver being on the same power line.

Incidentally, let it be understood that this patent purchase was for synchronization of transmitter and receiver and not that of sight and sound.

Mr. Lubcke has certainly traveled far since the days back in 1931, to be exact, December 3rd, W6XAO, went out on the ultra high frequencies to begin a regular schedule of broadcasts of television under the sponsorship of the Don Lee system and his supervision. A regular daily schedule was inaugurated and with the exception of Sundays and holidays, it never went off the air during this period, nor missed a single schedule.

Very little was known about television at that time but with 150 watts of power pushing the signal out on the assigned frequencies of 45,000 kcs. for sight and 49,750 kcs. for sound, they knew that some one would be able to receive the signals. But Mr. Lubcke did better than just guess about the number of scanners, or listeners, that he could possibly have. He let every one know that he was ready to mail out, without any obligation to experimenters, free of charge, a complete diagram of a television receiver which would pick up his broadcasts. Over three thousand requests for these diagrams were received and it was ascertained that over 100 television receivers were built. These "scanners" cooperated with him by sending in reports on image-clarity from their different locations in every direction and as far as 30 miles distance from the transmitter.

Occasionally, meetings were held where reception and transmission problems were thrashed out and reports made by the "lookers," which gave Mr. Lubcke a fair idea of how his presentations were being received. Experimenting went on with different systems and a few new methods were evolved out of this experimentation and patented.

In 1936, Roger Howell, one of the "scanners," situated at Long Beach, California, 20 miles airline from W6XAO, upon his own initiative demonstrated the television reception to the officials of his city and to the press who were very favorably impressed with this example of the art. After that, regular demonstrations of this high-definition television at distances of from 1/10 of a mile to 10 miles dis-

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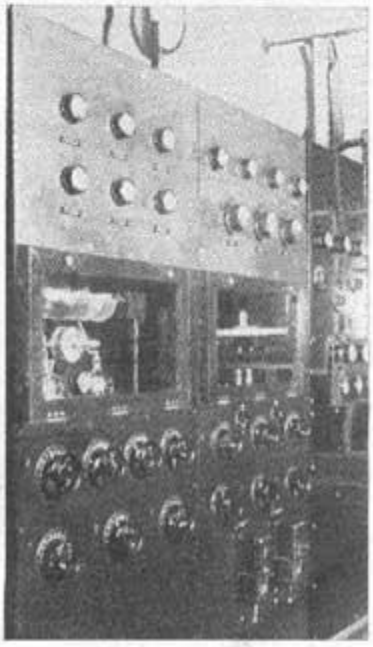
The author with some of the basic equipment used for live subject pickup. The tube is of new Mosaic design.

Special concentric cable developed for use with the tele-camera.



Transmitter panels of the Don Lee television station. They built them.

## West Coast Television

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tance from the transmitter were instituted by Mr. Lubcke.

W6XAO, situated in Los Angeles, was considered to be in a bad spot because of the surrounding high mountain ranges on three sides of the city. But in comparison with similar television activities conducted elsewhere, it managed to cover fairly large distances. The transmitter system used is of the high definition cathode-ray type 300 lines, 24 frame standard. On account of widespread 50 and 60 cycle power systems in and surrounding this area, this type was deemed to be the best. Within the service area of this transmitter approximately one million people are supplied with 50 cycle power and the other one million with 60 cycle power. Then there is the Mosaic live pickup camera equipment for broadcasting newsreels, shorts and test items.

The visual images are broadcast on the ultra-high frequencies of 6⅔ meters and the accompanying sound is transmitted on 5½ meters although this latter was, in the very beginning, on the same frequency as the television. A simple line-image of constant intensity and an accompanying 1000 cycle tone are broadcast at the beginning and end of each transmission on the bisula and aural transmitters, respectively. The image produces as 38 parallel horizontal bright bars in the field of view on properly operating television receiver and the sound is heard as a constant medium-high tone. A change in the intensity of these signals after a change has been made in a receiver is a measure of the effect of the change.

The image broadcast is a 300 line sequentially scanned picture with a framed repetition frequency of 24 per second which, of course, can be received on television receivers operating on 50 or 60 cycle home electric current. But a nine-inch cathode ray tube is required to reproduce the full details of the images broadcast and for rough experimental work, or where the expense of a large tube is prohibitive, recognizable images can be obtained on the DuMont 2" tube type 24XH or the RCA 1" tube, type 913. A standard negative image is radiated from the transmitter and on the average scanning receiver, if the image shown on the cathode ray tube is a photographic negative (white objects reproduced black and vice versa), one more or less stage of "audio" frequency amplification (following the second detector) will give the proper "positive" synchronizing pulses transmitted at the end of each line (7200 per second) and at the end of each complete image (24 per second). These pulses are of opposite polarity to the image signal variations according to the standard practice.

Television broadcasting station W6XAO is located in the Don Lee Building at Seventh and Bixel Streets in Los Angeles. It comprises two transmitters, operating on ultra-high frequencies. The vision signal is broadcast on a frequency of 45 megacycles, and the sound signal on a frequency of 49.75 megacycles. The power is 1000 watts.

Television as a great vehicle for cultural and educational benefits is visualized by Mr. Thomas S. Lee, president of the Don Lee Broadcasting System and owner of the west's only television station.

"Thus far, the television medium has been regarded in the same light as motion picture and radio," said Mr. Lee, under whose guidance the Don Lee network undertook the operation of W6XAO some nine years ago.

"While it is true that the scope of entertainment will undoubtedly be enlarged," he continued, "the infinite possibilities of television from a purely cultural standpoint have not yet been probed.

"The teaching of music by showing the fingering of stringed instruments; the picturing of a great musical conductor in action; the dancing of a master of the ballet, will be brought into the home to enrich the cultural outlook of the average family.

"Works of art may be shown in the process of creation. The finishing touches by the sculptor on a monument; the last brush strokes on a portrait; a lithograph in the interesting process of completion, will all be transmitted via the new medium."

According to Harry R. Lubcke, television director of the Don Lee network, activities have been aggressively carried forward during the past year.

During the daily transmissions, many details of the new technique of television have been uncovered. "One of the most startling of these," says Lubcke, "is the ability to change the apparent color of the hair of a subject from blonde to brunette, according to the lighting treatment of the set. Recently, a long shot of our performer, Gertrude Aitken, was so illuminated that she appeared as a brunette at distant television receivers. Later in the same program, on a ¾ length shot, she was definitely blonde. It will be admitted that this change was stumbled upon accidentally; however, it gives an indication of the power of the television instrumentalities in producing special effects. This particular effect was achieved through proper proportioning of light upon performer and background."

The close and continued teamwork necessary throughout a performance on the part of the technical and producing crew is a considerable extension of that required in radio, according to members of the Don Lee staff.

There must be continuous correlation between the sight and sound part of the performance and this, coupled with the more involved nature of the visual operations.

Nine years ago, the Don Lee Broadcasting System pioneered the introduction of television on the west coast, according to Lewis Allen Weiss, general manager of the network which operates a chain of 28 radio stations on the Pacific Coast. Through constant experimentation and development, the only western television station has undergone a steady process of growth and improvement.

The W6XAO television schedule now covers seven hours a week, with one or more broadcasts each day except Sundays and holidays.

Of this time, 1¾ hours are given to transmissions from film; 5¼ hours are live subject production. In order to present the live programs, 11¼ hours of rehearsal are spent by the cast and staff each week, with so-called "skeleton" rehearsals held prior to each telecast. The latter are the equivalent of the well-known dress rehearsal in radio and the show business. —30—

## Television Lessons

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C2-L2 circuit, on the other hand, is tuned to 8.5 mc. and acts as input to the 1853. To prevent pick-up of video I.F. strays the output of the 1853 is carried to the sound receiver in concentric cable.

The buffer stage of Figure 29B is similar as to what it does, but L1 is common to both the rejection (C1-L1) circuit and the acceptance (C2-L1) input circuit. It does not provide its own output load; L2 is the primary of the input transformer of the sound receiver.

Getting now to the video detection