Chicago NBC Studios

By HAROLD C. VANCE
Sales Engineer, Central District, RCA Victor Co.

MODERN equipment is essential to efficient radio broadcasting. Much depends on the reliability of apparatus, and both transmission and receiving equipment must be of the highest calibre. The National Broadcasting Company installs new apparatus as it proves itself worthy and feasible.

When NBC took over the operation of WENR, the company acquired a broadcasting plant, which, although a few years old, had been kept thoroughly modernized and up-to-date in every respect.

Early in 1930, a new RCA 50 k.w. amplifier (see figure 1) and a new rectifier (see figure 2) was installed. The new amplifier contained two 100 k.w. tubes, operating in a push-pull circuit. The new rectifier employs six hot cathode mercury vapor tubes, and was necessary to provide the higher voltage required by the 100 k.w. tubes.

FIGURE 6—LEFT, RCA PORTABLE TRANSMITTER, SHORT-WAVE, **O. B. KEELER,** GOLF AUTHORITY, HOLDS MICROPHONE, WHILE **DEWEY STURGILL,** NBC ENGINEER, HOLDS SHORT-WAVE RECEIVER AT LEFT

In addition to the broadcast transmitter, there is a 5 k.w. transmitter (see figure 1, left end) operating on 6020 k.c. and known as W9XF, an experimental international relay broadcast station.

Comments on signals from this station have been had from all over the civilized world. The transmission is especially good to Japan, Australia and New Zealand. The New Zealand Broadcasting Company has had remarkably good results in reproadcasting signals from this station.

FIGURE 5—LOOKING INTO STUDIO A, CHICAGO DIVISION OF NBC, ARMOUR PROGRAM REHEARSAL. **E. C. HORTSMAN,** NBC ENGINEER, AT CONTROL PANEL IN FOREGROUND

At the Chicago NBC studios, located in the Merchandise Mart, the largest building in the world, perhaps the most interesting feature for visitors who are conducted on tours through the spacious layout is the control room (see figure 3). In the background, near the ceiling and protected by a guard rail, is the power distribution board. On the floor, parallel bays of equipment racks may be seen. Contained in the bay at the left are the studio amplifiers, interlocking relays and terminating jack strips, while those on the right contain incoming and outgoing repeaters and associated equipment for the distribution of programs to local stations and to the network through which the broadcasts may be going.

At the back, looking like a row of big bay windows, are the "nemo" booths, used for monitoring both outside pickups and network programs. They are equipped with control circuits, and in actuality are miniature studios.

Seen in the foreground is the master control desk (see figure 4 for greater detail) located in an advantageous position so that the engineer can see what is taking place throughout the room. It is the electric nerve center of the whole system. The bays, or rows of lights, correspond to the studio channels, while the individual lights indicate the line amplifier which is set up on any particular studio for distribution to various stations associated with an NBC network.

The engineer at this desk has before him a picture in lights which indicates the continuity of any or every program circuit and studio that might be in operation. He has available at his finger tips means of correcting any discrepancy which may crop up for some untoward reason.

Loudspeaker or headset monitoring gives him an accurate check on every program, and from the board he is able to check several vital

points at which trouble might develop. Through a telephone arrangement direct and private means of communication with New York, also each studio. New York may be had at any time through a 24 hour leased telephone line. Should there be an emergency, he may switch to any one of three auxiliary circuits.

FIGURE 1—RCA 50 K. W. AMPLIFIER, FAR END OF ROOM. 5 K. W. TRANSMITTER AT LEFT END

The walls of the control room are finished in a silver tone, the woodwork being of black satin finish which affords a striking contrast to the Alleghany metal trim which dresses up the racks. The block panels noted at the top of the picture outlined in black, are treated acoustically.

Framed by the control room window (see figure 5) is an orchestra in rehearsal for an Armour program. Three thicknesses of glass may be plainly seen, this having been found to insure complete sound proofing. The engineer sitting before the control panel, with which he mixes the output of the various condenser microphones, used exclusively by NBC for broadcasting, keeps an eagle eye on the volume indicator, the "absolute," as far as he is concerned, and also is able to glance at the artists occasionally. On the table may be seen a carbon mike, used only for cummunication by the program director during rehearsals with the artists in the studio, while on the sill is the huge second clock with which all programs are accurately timed.

A new portable short-wave transmitter and receiver, which was used for the first time in connection with the American Open Golf Championship held in July of 1931, is shown in figure 6. O. B. Keeler, famous as a sports announcer and writer, is seen holding the microphone, while on the left of the picture may be seen the short-wave transmitter with the loop antenna. Keeler, in this picture, is shown listening to his own voice, as it is picked up by the cue monitor receiver, held at the right of the picture by Dewey Sturgill, NBC engineer. This instrument carried its own antenna in the pole which supports it, and when in operation, is located at some central spot during the actual broadcast, picking up the signal from the portable short-wave transmitter on the field.

This system proved eminently successful in broadcasting the golf matches, on which many interesting comments were received, and again it was used at the National Corn Husking Contest held in Grundy Center, Iowa, in November of 1931. Similar equipment was used in this case, with the exception that the receiver was housed in a tower. The reason for this was the limited amount of space needed to hold the contest.

H. C. Luttgens, Chicago division engineer in charge of NBC's plant operation and engineering department in the midwest, has been connected with broadcasting for the

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FIGURE 2—NEW RCA RECTIFIER, CENTER PANEL

FACTS, FICTION, AND FLATTERY

If you really want to know what a fine magazine BROADCAST NEWS is, you should read some of the comments in the "Outside the Broadcast Band" department of RCA NEWS, by our good friend W. A. Fitzpatrick. He was an editor when we were a pup.

Fitz is an old friend of ours, and we suspect that he has been suspended by his heels from the top of a certain tower in the old country whilst caressing the famous Blarney Stone,—but it's O.K. with us, Fitz old boy,—we love it!

We have always liked Fitz, since the day he assigned us to the U. S. M. S. "SUSQUEHANNA" with Jack O'Connell as assistant, under Captain Dundas. That's where we got our first experience at editing, in four different languages. Our passengers were divided into so many different nationalities that we had to do something like that to stimulate the sales of our sheet. But Jack went us one better in this direction, by moving whole armies back and forth across Europe during his "press" watch. One day the Bolsheviks would take Warsaw, and the next day Field Marshall Jack O'Connell would march the Polish Fusiliers around the end in a masterful flank movement, reversing the victory. The Chief Steerage Steward, being quite a lignuist, did the translating for Jack.

And in the meantime, our passengers (—mostly those in the steerage),—having read Jack's dramatic accounts of the day's activities, would launch terrific drives against each other, which would be quelled only after the Masters-At-Arms had waded in, brandishing their hickory sticks. However, the Radio Newspaper sales increased by leaps and bounds and how!

When we showed the returns to Fitz at the end of the voyage, we were first congratulated upon our four-language editions, and the cash receipts. — Then someone who could read Polish began to translate one of the copies, whereupon Jack O'Connell remembered an important date uptown.

The next trip we had a new assistant, and our receipts suffered severely. We wonder whose circulation Jack is stimulating now.

CHICAGO NBC STUDIOS

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FIGURE 3—MAIN CONTROL ROOM AT NBC CHICAGO STUDIOS. (SEE TEXT)

past 15 years, coming here from New York after the organization of NBC, of which station WEAF was the original unit. He began his career in the commercial radio field in 1917, having had extensive experience previous to this with the Marconi Wireless Company at Roselle Park, N. J.

All equipment for WENR and also the studio equipment mentioned was furnished by RCA.

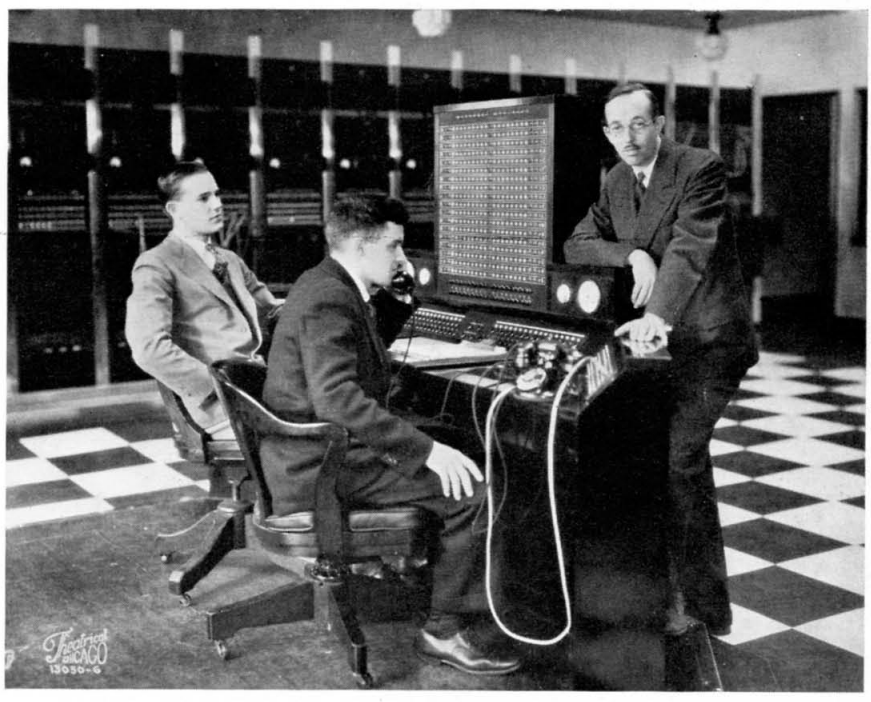

FIGURE 4—MASTER CONTROL DESK. AT RIGHT, **O. B. HANSON,** MANAGER OF NBC PLANT OPERATION AND ENGINEERING DEPARTMENT. AT LEFT, **H. C. LUTTGENS,** DIVISION ENGINEER. IN CENTER, **J. C. MILLER,** CONTROL ROOM SUPERVISOR

THEY'RE TELLING *US!*

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BENEDICTINE DE FECAMP"

So many American radio fans are French in sentiment. It's a good way to listen to any program—French, English, or Japanese!