

# MODERN STUDIO TECHNIQUE

A few of the high-lights of building and operating a modern broadcast studio show how very complex this apparently simple work has become in perfecting the nationwide distribution of radio programs.

C. W. PALMER

**A**NYONE WHO has visited one of the modern broadcast studios has no doubt been struck with the "apparent" simplicity of the room compared to those used a few years ago. The word *apparent* is used because, as we will learn later, they are far from being as simple as they seem. The heavy drapes and carpets found in the old-time studios are missing and the announcer is no longer expected to be a Houdini, handling the production of the program as well as announce, act as master of ceremonies, and usher for the artists and studio audience!

The studio of today is a well-appointed room, plainly furnished—but usually rich in coloring and lighting.

Yet, under the quiet, dignified appearance of this modern studio lies all the ingenuity of the electrical, acoustical and mechanical engineer. Take for example the corner of the studio shown

in Fig. B in which Ray Kelly, chief of the NBC Sound-Effects Department is shown with a few of his latest gadgets for producing the background noises and incidental sounds required with every broadcast. The walls of this studio in Radio City are lined with rock-wool blankets, varying in thickness according to the requirements of the room, and the wall finish, instead of being hard plaster of the usual type, is constructed of panels of a material known as *transite*. This *transite* is perforated on the upper part of the wall, while the wainscot is made of the same material in a solid form. *Rockwool* is chosen as the padding because of its characteristic of absorbing medium and low tones more readily than high ones. This gives the desired effect of a "dead" space for the medium and low tones and a "live" space for the high ones.

The floors of this studio are also treated in a very special way. There are 5 steps in this treatment. First, the solid concrete building floor is equipped with steel flooring channels which rest on hair-felt-covered spring clips, properly spaced to carry the anticipated load. The space between the channels, which are laid parallel the full length of the room, is covered with loose rockwool. Next a layer of heavy, black, building paper is placed over the entire floor, over which a wire mesh is then placed. Finally, a layer of concrete is poured and the finished floor is ready for linoleum. Some of these steps in floor and wall acoustic treat-

ment are seen in Fig. C.

By this method, the drapes are eliminated and the studio has better characteristics for broadcast purposes.

An idea of the multiplicity of studios used for operating a national chain can be obtained from an examination of Fig. 1. This shows a plan view of the 8th floor of the NBC studios in Radio City. Note the differently-sized studios, each of which is used for a different type of program. There is the large auditorium studio at the right which is 132 ft. long and 78 ft. wide. This is used for large orchestras and for exceptionally popular programs where large studio audiences always congregate. To the left of this mammoth room which is two floors high and has a large balcony for the studio audience are the various smaller studios, each with its control room, from which the program is monitored. Note also the special studios for speakers and (Continued on page 498)

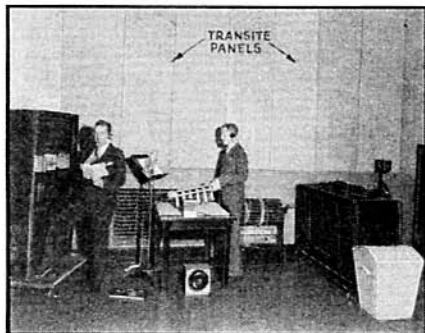


Fig. B. A corner of a modern broadcast studio.

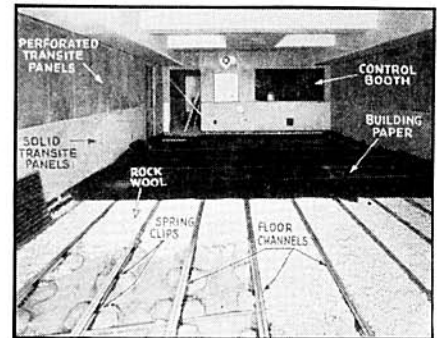
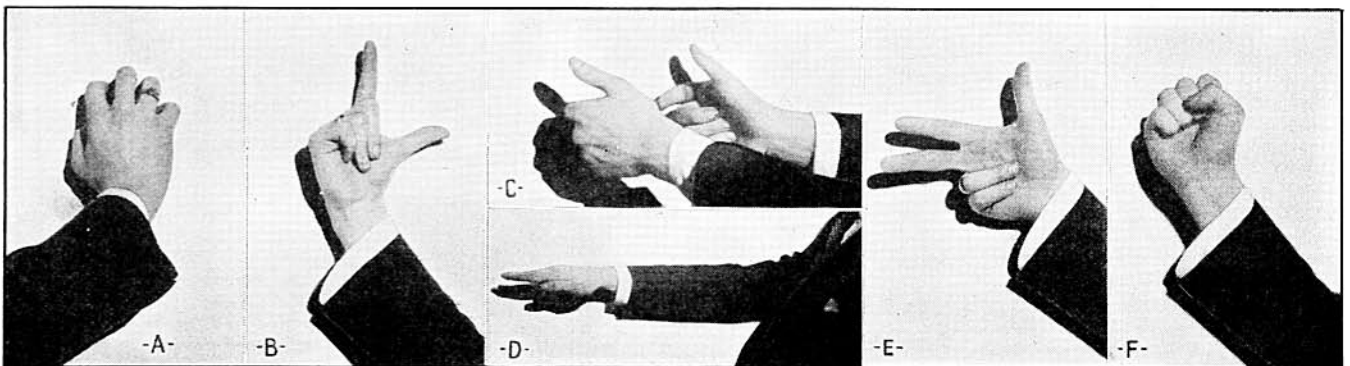


Fig. C. Details in acoustical treatment of studios.

Fig. D. A few of the studio hand signals used to inform the announcer and artists of the progress of a studio program.



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## MODERN STUDIO TECHNIQUE

(Continued from page 460)

the children's studio!

We mentioned before that the announcer's duties have changed a lot in recent years. In the early days of broadcasting, the announcer was the king-pin of the studio broadcast. He planned the programs so that they ended somewhere near the correct time for station announcement; he assisted artists and sometimes acted as accompanist; he greeted guests and artists; he filled in when programs fell short; and in other words he was as indispensable as the microphone or transmitter.

Now, however, the announcer's duties are limited to station announcing, reading advertising "patter" and obtaining studio audience reactions to fit the program (applause at the right time, etc.). The timing of the programs and the planning of continuity (or "script") are taken care of by a person known as the production manager. He usually sits in the control room with the operator so that he has full control over the out-going program.

### HAND SIGNALS

Since cooperation between announcer and production man are essential, and since verbal communication between them is obviously impractical, a set of hand signals has been worked up to handle this communication. Some of these signals are shown in Fig. D. The detail at A is the sign for "fadeout" at the end of the broadcast; B signifies that it is time for a local announcement; C tells the announcer to move the artist closer to the microphone; D tells the operator to cut the program after the music fadeout, and permits the relaxation that always follows a program for the artists, announcer, operator and production man; E signifies that the program must be cut—in case it is running too slow; and F tells the orchestra leader to end the musical selection, or, in the technical vernacular, close off.

There are other signals such as waving the hand in a circular motion to speed up the program. A finger planted firmly against the side of the nose signifies that the program is running according to schedule, etc.

Since these signals also apply directly to the artists, and are used by announcers to signal

to vocalists, musicians and speakers, as well as between the announcer and production man, some very amusing incidents have taken place from time to time. For example there was the case of the prominent man who was giving a talk. He noticed the announcer place his finger on his nose several times and misunderstanding the signal finally blew his nose violently and noisily to the consternation of the entire staff and the amusement of the listening public! Since artists are usually given a course in studio signals such cases are becoming rare, though.

### THE STUDIO APPARATUS

The operations which the studio or control room operator handles can be understood from Fig. 2, which shows in block form the various parts of a studio amplifier. First there are the various microphones which may vary from one to a half-dozen or more for a studio broadcast. These are all fed into a mixing panel where the sound level of each can be individually controlled and mixed together to produce the signal sent out over the air. From this mixing panel, the signals are fed into a low-level amplifier which is also controlled from the same panel as the mixing potentiometers, by means of the master gain control. From this point, the signal is fed through a high-gain amplifier which feeds the signal directly to the power amplifiers in the transmitter or onto the balanced telephone lines to remote transmitters, in the case of network programs. A very small part of this output signal is tapped off and fed through an additional amplifier to operate the control-room speakers for monitoring the output. In this way, the operator and production man hear the program as it is actually transmitted.

The lower part of Fig. 2 shows the corresponding sound level in the various parts of the studio amplifier.

The relative positions of the control-room operator who "rides the gain" and the production man, as well as the control panel are shown in a striking manner in the illustration on the cover of this issue. Incidentally, this is a view of the auditorium studio on the 8th floor of the NBC studios at Radio City.

A rather interesting and unusual studio is shown in Fig. A at the head of this article. This studio, known as the Little Theatre, is designed especially for dramatic productions and has special lighting equipment and a glass curtain. Two control rooms are provided, one for

program monitoring and the other for controlling lighting effects, and the glass and opaque curtains. This studio is equipped with comfortable theatre seats for the audience and additional visitors can watch the programs from a glass enclosed balcony.

From this description of the make-up and operation of a modern studio the complexity of modern studio technique compared to the earlier varieties can be readily understood.

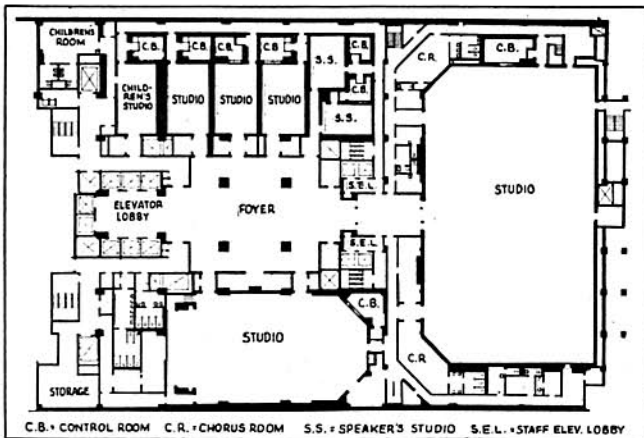


Fig. 1, above. The floor plan of the 8th floor of the Radio City Studios of N.B.C.

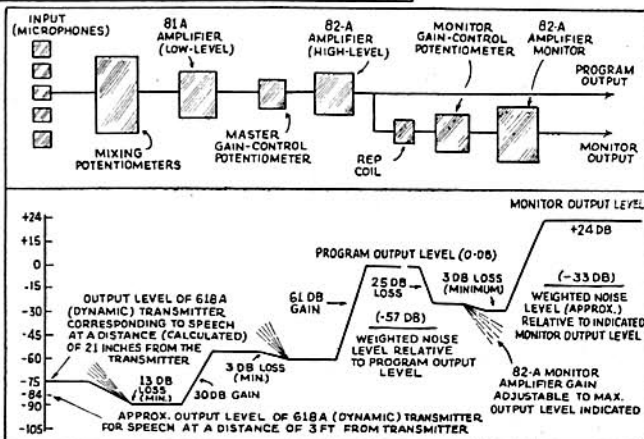


Fig. 2, right. Block diagram showing the action in the various parts of the studio amplifier equipment.