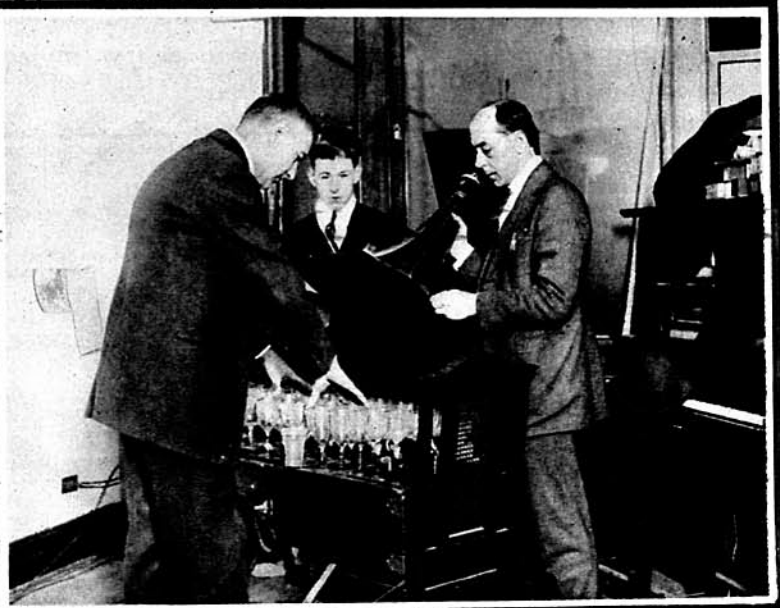


Methods of Transmission Used in Broadcasting Stations



This Operator is Holding the Microphone Near the Victrola Horn and Transmitting the Record by Radio.



Transmitting Musical Notes Produced on Wine Glasses, by an Artist, at One of the Broadcasting Station Studios.

MUSIC and speech is today being broadcasted by scores of stations throughout the United States on regular schedule. With suitable receiving apparatus it is possible for people living in almost every section of the country to listen each hour of the day to programs of various descriptions, providing them with education and entertainment. Seldom is a station unable to keep to its schedule by reason of breakdown. Their programs are published in the daily newspapers. Most of them commence broadcasting at 11:00 A. M., play one or two selections on the Victrola, and possibly give a weather forecast. At noon the time signals from the Navy Station at Arlington are received and relayed by some

sent out. In the evening speeches by well-known men and women are made on various topics, and musical concerts of one or two hours duration broadcasted. The music is provided by artists of the opera and stage. Vocal and instrumental music is enjoyed nights by thousands.

In transmitting this music, various methods are used. In connection with the station there is a studio in which the artists sing or play. There is little or no sign of radio apparatus. The transmitter is in another room and the only connections between the two rooms are the wires leading to the microphone. One microphone is very often all that is necessary. If an artist is singing to piano accompaniment,

the microphone is supported on a stand, and attached to it is either an ordinary large megaphone or one of special design which is best able to collect the sound waves of the singer's voice and convey them to the microphone. It is supported at a level with the head of the singer. Sometimes another microphone with megaphone attachment is held near the piano. With one or two large and suitably designed horns, it is possible for an entire orchestra to play in the studio and their music be conveyed by the microphones to the transmitting apparatus.

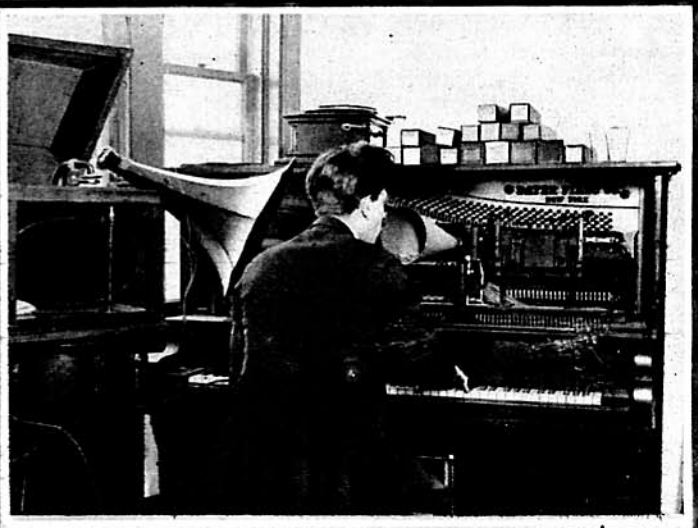
It is manifest that one of the most important features of music and speech transmissions is the microphone. The method at present used has been adopted as the result of years of experience to find the best method of modulation.

Radio telephony is obtained by the variation at audio frequency of the amplitude of radio frequency waves.

It is essential that the radio frequency
(Continued on Page 984)

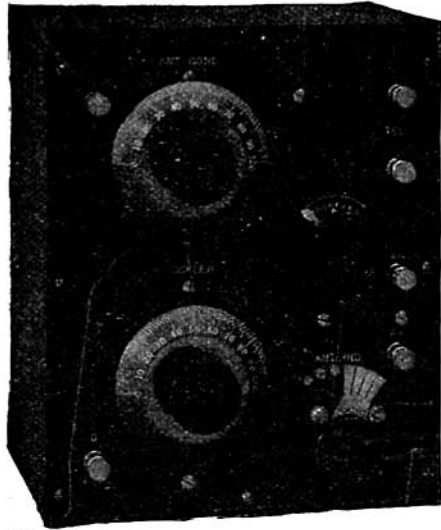


Reading the Weather Report to the Thousands of Radio Audiences in Their Homes.



An Artist Singing into the Microphone at One of the Broadcasting Stations and Playing His Own Accompaniment on the Piano. Note the Two Horns, One Being Used to Pick Up the Voice, the Other the Music.

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If you haven't already received a copy, you should send 6c in stamps for the C-E Radio Catalog—it covers every essential radio requirement.

Specifications

Panel—Formica, handsomely finished.
Cabinet—Solid mahogany.
Condenser—Balanced type, 2 Rotary, 3 Stationary plates. Built on Vernier.
Dials—Indestructible metal. White figures on black ground.
Antenna Inductance—Wound in Formica Tube.
Plate Inductance—Wound on molded ball.
Binding Posts—Black rubber covered.
Switch—Fan Blade.
Rheostat—C. E. Type H400.
Circuit—Single circuit regenerative. Licensed under Armstrong U. S. Patent No. 1,113,149.
"B" Battery—Contained in compartment inside cabinet or external as desired.

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Hawaiian Islands, near Honolulu, a distance of about 2,500 miles airline, this being verified by a signed statement from the operator of the station near Honolulu. This station (7XG) is located at 400 East 22nd Street North Portland, Oregon, and would be more than pleased to receive communications from any stations hearing 7XG on voice, C.W. or I.C.W. Anyone wishing further information can be assured that their inquiries will be promptly and cheerfully answered.

Methods of Transmission Used in Broadcasting Stations

(Continued from page 946)

waves be of fairly high frequency and completely steady or undamped.

Many experiments using arc and radio-frequency spark transmitters were conducted in the early days of radio telephony, but only by the perfection of the thermionic valve or audion and its use in the production of continuous waves and in the amplification of the modulations of the voice has it been possible to bring the radio telephone to its present efficient stage.

Various kinds of microphones for modulation purposes have been used. One type was the Fessenden condenser microphone, and consisted of a variable condenser, the movable plates of which were connected to the antenna and the stationary plates to the ground. The position of the movable plate was varied by the voice modulations and the antenna capacity varied accordingly. This had the effect of detuning the antenna in synchronism with the modulations of the voice.

The carbon-grain microphone, which is a very old method, is still used extensively and is, in fact, about as efficient as any. The vibrations of the microphone diaphragm produced by the voice, vary the resistance of the carbon-grains across which is connected the modulation circuit.

One of the most modern methods which is being used very extensively, is particularly adapted for orchestra music or singing voice, when the concentration effect of a horn would prove harmful to the tone of the music. This is known as the "Phonotron," and consists of a large paper diaphragm of special design which is attached to a small movable armature coil supported in the field of an electro-magnet. The vibrations produced in the diaphragm by the music or voice make the armature coil vibrate in the magnetic field at the same frequency. Current is, therefore, induced in the armature which is connected to the modulation circuit of the transmitter.

The New Radio Legislation

(Continued from page 944)

ing to operate radio telephone broadcasting service should be required to co-operate with municipal or state service in the use of the wave band, 275 to 285 meters, assigned to the latter service.

Note 6. When transoceanic radio telephone experiments are to be conducted the Department of Commerce should endeavor to arrange with other countries for the use of the wave band, 5,000 to 6,000 meters assigned for this purpose.

Note 7. The wave band from 1,550 to 1,650 meters is for use of radio telephone communication over natural barriers, but is not exclusive of other services.

Note 8. The wave band from 700 to 750