



Above, Major Edwin H. Armstrong at the control panel of W2XOR, atop 444 Madison Ave., during the 1/2-hour dedicatory air-premiere program of this wide-band Frequency Modulation station. At left, J. R. Poppele, WOR's chief



engineer; and right, Alfred J. McCosker, WOR's president. The photo at right shows engineers monitoring an F.M. broadcast in WOR's "Studio One" at 1440 Broadway.

STATION WOR GETS F.M. VOICE

NEW YORK CITY got its first full-time wide-band Frequency Modulation radio transmitting station last month when WOR started regular daily program service over W2XOR from the 42nd floor of 444 Madison Ave. At this elevation (about 630 ft. above sea level) the radius-range is about 48 miles.

The new super-fidelity, staticless transmitting station, the first of its kind in the city, was officially dedicated when Major Edwin H. Armstrong, inventor of the wide-band system of F.M. broadcasting employed in this station, threw the key that put the station on the air.

W2XOR will operate on a daily schedule from 9 A.M. to midnight with programs originating from WOR's New York studios at 1440 Broadway, from Newark (N.J.), and

from the Mutual Playhouse in N.Y.C. Operating on a frequency of 43.4 megacycles (43,400 kc.) the station will originate 2 hours of programs of its own apart from those of its mother station, WOR.

The 1,000-watt synchronized transmitter of the station is the latest product of Western Electric laboratories and incorporates several innovations in frequency modulation design that result in less distortion, less dial drift and easier tuning for F.M. listeners; a new type of circuit and temperature-controlled crystals give it the unusually efficient frequency stability of 0.0025%. The transmitter and studio equipment is designed for a fidelity range of 30 to 15,000 cycles.

A unique feature of the new F.M. station, is that it is equipped for frequency modulation *all the way*, with special equipment

including a new "egg" microphone in the studio (see photo at upper-left); also, high-fidelity broadcast lines that connect studio and transmitter are corrected for a frequency range of 20 to 20,000 cycles.

The vertical coaxial antenna on the roof stands 75 ft. above the roof. Two auxiliary 40-ft. antennas on the roof are for emergency use with the F.M. transmitter, for facsimile, and high-frequency shortwave relay broadcasting.

The transmitter room at 444 Madison Avenue is also a research laboratory and will be equipped with a workshop and measuring apparatus, so that research and experimentation can be carried on at all times.

Application is pending for permission to operate a 100-watt RCA auxiliary F.M. transmitter.

Present Status of

F.M.

Broadcasting

DICK DORRANCE

THE progress of Frequency Modulation ("F.M.") as with anything that is new and not fully understood—has given rise to a number of common fallacies, widely spread by omnipresent pseudo-experts who do not grasp the picture quite so fully as they believe they do.

Many of these fallacies deal with the capabilities and limitations of F.M.; others seek to anticipate public reaction. Most of them are sheer conversation pieces. All of them bear refutation, in light of the remarkable growth that has attended the new noise-free, full-fidelity method of radio broadcasting during recent months.

Here, for example, are a few representative misconceptions about F.M. that have gained erratic circulation.

(1) *F.M. stations can't be heard more than 50 miles from the trans-*

mitter. Therefore they can't begin to service as great an area as the regular amplitude stations. It will take many, many more stations to cover as great a territory as that reached by the major standard stations today.

This is a common example of misinformation. The coverage area of an F.M. station is based on a combination of 3 factors:

- (a) The height of the antenna above the surrounding countryside;
- (b) The power used at the transmitter; and,
- (c) The type of antenna employed.

Service ranges of 100 to 125 miles from the transmitter are quite possible, and many of the applications now pending before the Federal Communications Commission will be for such service areas. The range of an F.M. station is the same by day and night—an unvarying, unfading signal of remarkable clarity. Very few 50,000-watt stations of the ordinary type reach a greater area with consistency during daytime hours. The night-time coverage is greater, of course, but marred by fading, static and cross-interference beyond the primary coverage area.

(2) *F.M. networks are impossible with the use of telephone wires because these wires won't carry the high-fidelity*

notes that F.M. demands for full-natural quality. Therefore the use of radio-relay—small transmitters placed at intervals across the country to carry programs from network station to network station—is the only answer. This would be very expensive and there is no proof that it might be satisfactory for a coast-to-coast hook-up.

Wrong again. Telephone wires can carry the 30-to-15,000 cycle range of tone demanded by F.M. stations. They can carry even much higher ranges. Such telephone lines do not exist widely at present because there is no great demand for them. But the phone companies stand ready to supply this superior service when the demand is strong enough to warrant the installation of such new facilities.

The development of F.M. networks on a nationwide scale, co-operatively run, is expected to start within another year or two. By that time the telephone companies will probably have the new, full-range wires ready for use.

(3) *The public has a "tin ear." The public can't tell a high note from a medium one. Furthermore, the average hearing doesn't register above 10,000 cycles, so why bother with a lot of fancy equipment to bring in notes as high as*