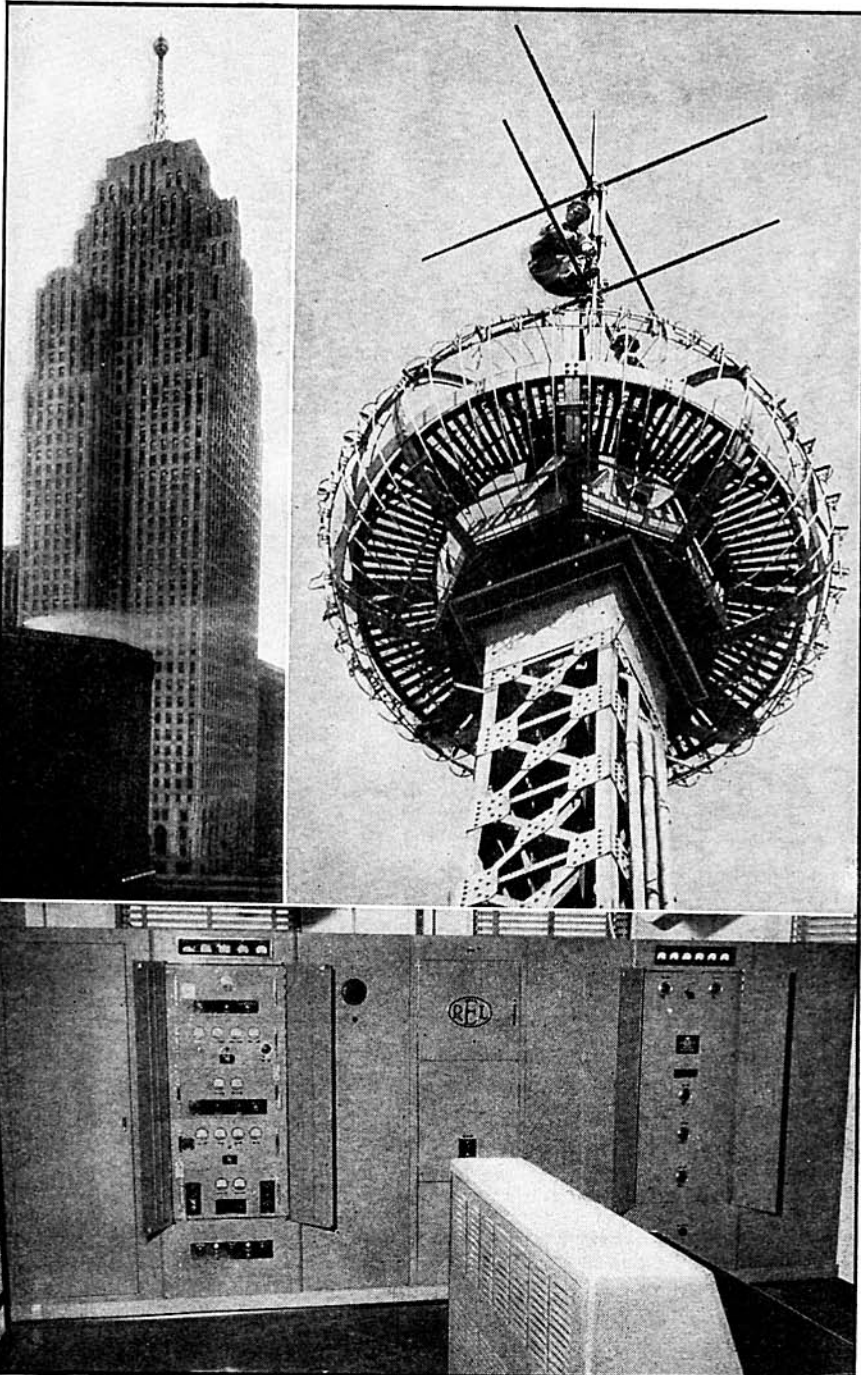


# W45D — DETROIT

Front Cover Feature

## Gives F. M. Antenna Facts



Photo—The Detroit News

Top left—Station W45D occupies the entire 45th floor of the Penobscot building in downtown Detroit. Top right—2-Bay turnstile antenna atop neon ball and tower. Bottom—R.E.L. 3 KW. driver for 50 KW. amplifier.

**F**M may be a youngster, yes—but a mighty healthy one that is growing up fast.

FM offers two qualities far superior to Amplitude Modulated Broadcasting: (1) It permits the transmission of a sound range identical with that of the human ear. (2) It is *static-less*! These two remarkable advances, developed by Major Edwin H. Armstrong (inventor of the super-heterodyne circuit) have made it possible for anyone in his home to hear sounds exactly as they are created in the studio, with all

their subtle inflections, overtones, and harmonics. FM's first-time listener finds reception as much improved over ordinary AM broadcasting as AM broadcasting is over the sound he gets from his shrill, raspy telephone.

No wonder Mr. Listener has responded with contagious enthusiasm!

The number of FM receivers in Detroit alone increased from 1,500 in May, 1941 (when W45D began broadcasting) to 12,000 by January, 1942—and the ratio of increase is by no means diminishing. With

radio scheduled to play a vital part in disseminating news and maintaining public morale, there will probably be no great slackening in FM's constantly growing popularity.

Not only does FM supply the listener with virtually static-less reception, but it provides him with a new source of programs including, especially, fine music that has been all too frequently crowded off the air by "soap operas" and comedians.

Surveys have shown that the W45D audience particularly favors concert and classical music by the better-type orchestras—even though they may be transcribed—and the music of the Novachord and organ. In its 18 hours of programs a day, W45D includes a generous portion of classical music shows. Audience response to those has been gratifying.

FM is now reaching into thousands of homes giving *static-less* radio reception to all who have changed over to radios designed to receive the *wide-range* Frequency-Modulated signal. Set owners are generally encouraged to install outside antennas of a prescribed type, since the proper antenna greatly improves reception.

In order to understand the importance of a good receiving antenna, it must be realized that the noise elimination or noise reduction on FM is due more to the presence of an FM signal in the receiver, than to the FM receiver circuit itself. The stronger the FM signal that is being fed into the receiver, the more noises of various sorts will be reduced, and finally suppressed entirely when the signal input reaches the value necessary for that particular receiver to give *complete noise suppression*. The receiving antenna is the *signal "collector"* and its efficiency determines how much signal is fed into the receiver. In other words: it is possible for noise to be heard on an FM receiver, if the signal received from an FM broadcast station is *TOO WEAK* to suppress all noise, or if the *receiving antenna used is NOT suited for FM reception*.

Fortunately it is rather simple to construct and install a receiving antenna that is much more effective for FM, than even the best low frequency antenna used by most listeners for AM. An antenna's effectiveness depends, among other things (according to Carl Wesser, chief engineer of station W45D), upon its *length* in relation to the *operating frequency*. The *higher* the frequency, the *shorter* the wavelength and the more nearly we approach a half-wave in length of the receiving antenna, the more effective it will be.

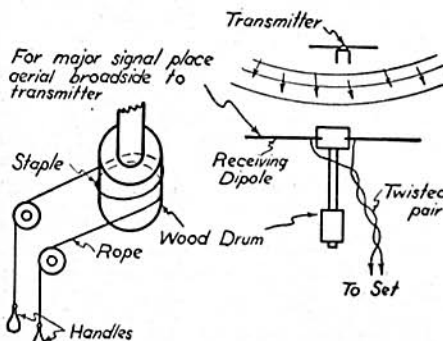
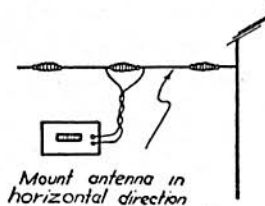
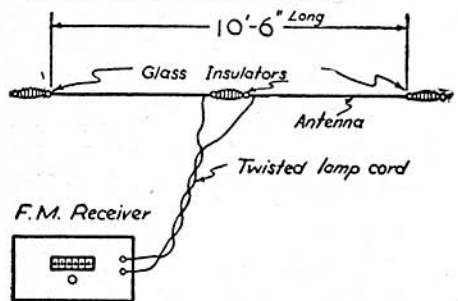
### SIMPLE "FM" RECEIVING AERIAL

A simple way to construct an FM antenna is by cutting a piece of antenna wire to the approximate half-wave length of the middle of the FM broadcast band. This wire would be about 10'-6"-0" long. In order to make this antenna as effective as possible, we should plan on hanging it well in the clear of surrounding objects, or at least by 15 feet, and as high above ground and buildings as we can. This would remove the antenna well from the receiver, which necessitates a "link" or transmission line between the antenna and the set. This transmission line can be a piece of twisted lampcord, such as is sold in most 5 and 10 cent stores. To connect this transmission line to the antenna, it becomes necessary to cut the 11-foot length of wire in the middle,

and insert a small glass antenna insulator at this point. The same type of insulator should be used at each of the "free" ends of the antenna. To the inner ends of the two halves of the antenna we now connect the two wires of the twisted transmission line, while the opposite ends of this line should connect to the two antenna posts of the set. To hang the antenna, rope should be used from the free-end insulators to whatever it is to be tied, since wire of any kind at these points will affect the operation of the antenna noticeably.

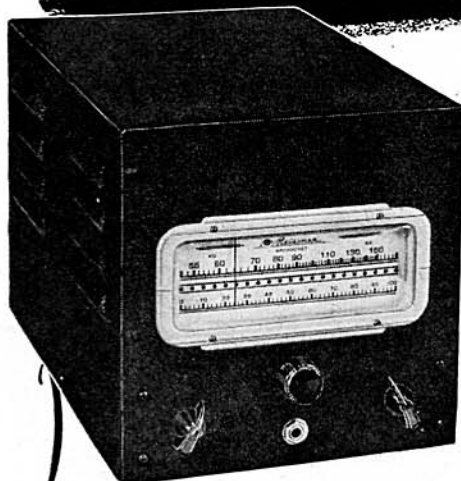
The antenna, or di-pole, as just described, should be stretched in a horizontal position. This is necessary because it should be in the same position as the transmitting antenna, and by now most FM broadcast stations are using horizontal "polarization." In hanging a di-pole it should be remembered that this type of antenna is directional and will pick up no signals from the directions of the free ends, and will have maximum pick-up on signals that arrive from a broadside direction. Be sure that your antenna is oriented *broadside* to the general directions from which FM stations are to be received.

If your location is such that desired FM stations are located in various directions around you, it may become desirable to construct a rotatable di-pole. This can be done by substituting two pieces of metal fish pole, or buggy whip car antenna, cut to the required length and mounted on two pairs of small stand-off insulators on a piece of 1" x 2" wood, about three feet long, with a pivot in its center, and ropes or some other simple means for rotating the di-pole into the position that gives the best signal on the desired station. This arrangement can often be used to eliminate signals from stations other than the desired one, but operating on the same frequency. All FM broadcast stations serving the same area operate on different frequencies.



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