



Right: CBS radio engineers complete tuning the temporary FM antenna atop the Salmon Tower (left) at 500 Fifth Avenue, New York City, preliminary to inauguration by the Columbia Broadcasting System of a schedule of FM news and music programs. The programs serve the New York area, which includes about 8500 square miles.

One of  
New York's  
FM  
Broadcasters  
CBS  
Station  
W67NY

**W**67NY, New York City FM station of the Columbia Broadcasting System, has been broadcasting news and music programs six hours daily, Mondays through Fridays, since Monday, December 1, at 3:00 P.M., EST. Broadcasts are scheduled from 3:00 to 6:00 P.M. and from 7:00 to 10:00 P.M. The programs are carried by high fidelity wires from a studio in the CBS Building at 485 Madison Avenue to the new temporary FM transmitter atop the Salmon Tower at 500 Fifth Avenue (New York).

A new antenna-supporting pole has been built atop the same structure at 500 Fifth Avenue for a permanent antenna that may be installed in a couple of months. The pole has a 65 foot mast supported on a 25 foot steel base, projecting a total of 90 feet above the tank house steel atop the building. The pole consists of 24,000 pounds of steel structure, and its top is 782 feet above the ground.

Installation of the permanent FM antenna is to be delayed due to national defense demands on necessary materials. Powered with a 3-kilowatt transmitter, the permanent installation will operate under the call letters W67NY, and will serve the standard New York area of 8500 square miles with a population of 12,000,000. The temporary antenna now in operation covers the same area. It is a single-bay turnstile antenna that first went on the air November 17th. Operating at a reduced power of 250 watts on that day, the temporary antenna broadcast an unmodulated carrier signal.

The roof of the Salmon Tower is peculiarly well-adapted for an antenna construction because it has a workable surface area with no spires or decorative ornaments. CBS engineers examined fifteen of New York's tallest buildings before they decided upon the Salmon Tower.

The antenna-supporting pole is con-

structed atop the water tank on the roof of the building. A special bracing has been added to the water tank to support the pole. The pole is comprised of twelve units and weighs 12 tons. Special fixtures were made by machine tools to accommodate the swaged fittings of the twelve units.

The pole was designed to meet the radio specifications of the CBS radio engineering department, and to meet the physical specifications of their construction department. The construction job was supervised by Columbia's C. R. Jacobs and Kingdon S. Tyler. Radio engineering was supervised by Clyde Houldson who had been detached from other CBS engineering duties to be the engineer on the premises.

All materials which went into the construction was brought into the building via its 30 West 42nd Street service entrance. They were then carted through the basement and placed on the elevator where they were hoisted to the 58th floor. From there they went through hatchings to the elevator machine room on the 60th floor. Then they were raised to the roof through skylights. Light-weight wood poles, the same size and shape of the steel sections, were first carried through to check this route to the roof.

The permanent antenna installation will have 4 stacks of "loop" antennas at sixteen foot intervals starting five feet from the

top of the tower. The "loop" is an improved antenna design developed by Andrew Alford, an engineer of the Federal Telegraph Company. One "loop" gives twice as much power as the earlier "turnstile" antennas. As the number of loops is increased, power is concentrated on the horizon with greater efficiency.

The signal radiated by a four-stack loop antenna in all directions is equal to that of a standard antenna in its best direction using four times as much power. The rules governing FM broadcasting preclude competitive advantages of one station over another. A specific area has to be covered in each instance; this is effected by making the most desirable compromise between height of antenna, power of transmitter, and antenna gain.

A series of matching elements is mounted on the antenna-supporting pole. With four loop antennas there are naturally four signals. With the matching elements, however, a single signal arrives in step at the receiver.

Each loop consists of a maze of two and a half inch copper-plated steel pipes folded to form a six-foot square. There are two gaps in opposite corners of the square. These are metal plates thirteen inches in diameter, and are condensers used to increase the radiation efficiency of the antenna.

Inside the pipes are electrical heating elements which are used as a protection against sleet. They prevent ice from forming on the antenna.

A pair of two and five-eighth inch tubular transmission lines connect the transmitter in the control room on the 60th floor to the antenna. The sound, as in AM radio, comes from the broadcasting studio over a special high quality line.

The structure is designed to withstand simultaneously a 125 mile an hour gale and a two and one-half inch ice load, over its entire 90 foot length.

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**FM Listeners!**

Write to the program director of your local FM Station: Tell him how the station comes in at your location, how and what type of programs you enjoy, etc.—Editor

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