

THE breaking of a trail, several weeks ago, along the rocky ridge, more than a mile high, between Stepps Gap and Clingmans Peak in North Carolina, marked the beginning of the construction of W41MM.

Located in the heart of North Carolina's mountains, the top of the station's antenna will reach to a height of 6,885 feet above sea level. This will be more than 200 feet higher than the summit of adjacent Mt. Mitchell, which is the highest point east of the Rocky Mountains.

With 50-kw of power, maximum antenna gain and this great altitude, W41MM, on the basis of coverage area, will be possibly the largest frequency modulated broadcasting station in the world. The calculated area within the 50-microvolt contour is approximately 70,000 square miles. Since signals of considerably less intensity than 50 microvolts are useful in rural areas, in all probability, the total service area will exceed that figure.

No available site in the east is better suited for the location of an FM broadcasting station. To the east, and south, within a very short distance, the elevation falls off thousands of feet to a plateau sloping gradually to sea level. To the west are the Smoky Mountains with a convenient pass in direct line with Knoxville and Nashville, Tennessee. Northwards are the mountain regions of Virginia, West Virginia and Kentucky. The elevation of these mountains decreases rapidly as the distance from the transmitter increases, in such a manner that very few undesirable shadows are anticipated.

The transmitter will render service to parts of seven states. Within the 50-microvolt contour live over 5,000,000 people. There are more than 400,000 farms, hundreds of villages, towns, and cities, innumerable mills and manufacturing plants, more than thirty standard AM broadcasting stations, plenty of static, and comparatively poor broadcast service.

Among the larger cities in the 1-millivolt area are Knoxville and Bristol, Tenn., Asheville, Charlotte, and Gastonia, N. C., and Spartansburg and Greenville, S. C. In the secondary area are located Winston-Salem, Greensboro, High Point, and Salisbury, N. C., Columbia, S. C., Augusta and Athens, Ga., and Bluefield, West Va. If directive receiving antennas are used, it is expected that a good signal can be received in Durham and Raleigh, N. C., Nashville, Tenn., as well as in Chattanooga and Atlanta, Ga., and Roanoke, Va.

The erection of Station W41MM was under-taken because of my active interest in the many organizations and projects engaged in the promotion of economic and cultural developments in the South. I believe that an FM broadcasting station operated from Winston-Salem will be of great value in furthering these public services.

Because of its remote location in the Southern Appalachians, W41MM necessarily will be a completely self-contained station. Primary electric power will be supplied by several Diesel driven generators. Programs will be transmitted to the station from Winston-Salem, 105 miles distant, by FM relay. Later on, it is hoped to establish these relays at other remote program sources.

A mile-long road from Stepps Gap to Clingmans Peak must be constructed and water has to be pumped from a level 800 ft. below the transmitter site. Sufficient land is available for the erection of numerous directional receiving arrays.

Weather conditions at Clingmans, while not as severe as at Mt. Washington, N. H., are nevertheless extreme enough to require precautions against interruptions of service. The highest recorded temperature has been 79 degrees while the lowest has been 20 degrees. This low makes it necessary to bury fuel and water tanks for several months' supply below the frost line, which is approximately 3 ft. Permanent quarters for the staff are planned, as the nearest town is 85 miles by roads which are often impassable during the winter months.

The antenna structure is designed to withstand winds up to 100 miles per hour, and also heavy sleet loading. Several interesting plans for de-icing are under consideration.

If it is, possible to carry out the present schedule, the 3-kw. driving unit will be available for such operation as may be authorized in the fall and the 50-kw amplifier will be ready for operation early next spring.

When completed and in operation, W41MM will serve an area that is considered one of the most rapidly growing regions of the United States and will make available broadcast programs to thousands who otherwise would have to do without.

FM / August 1941.