

# TELEVISION OPENS NEW ERA FOR RADIO IN MILWAUKEE AREA

FOR nearly twenty years people have been talking about television. During most of this time it has sounded like a mere dream. It seemed something unbelievable to nearly everyone—except the engineers who worked in the field of television. It was almost like the early days of aviation. People couldn't imagine that they would be flying through the air. Neither could they visualize that they would be able to see actual events as they take place by watching a television receiver in their living room.

## Open WTMJ-TV December 3

Many years of highly technical research work have been carried on in television and pioneering in this work has been the Journal Company in Milwaukee. Now WTMJ-TV, The Milwaukee Journal Station, is ready to make television a reality in Milwaukee. The final preparations are being made at Radio City for the television station to begin a regular program schedule about December 3.

Policies of The Journal Company have always been of a pioneering nature. Because of this, its engineers have constantly engaged in experimental work in broadcasting and communication fields. At one time, The Journal Company held licenses for ten stations, eight of them on an experimental basis. They were high frequency relay, medium frequency, shortwave, ultra high frequency, facsimile, and television stations.

First steps toward television were taken in 1928. The Radiovision Corporation, which obtained patents on the Cooley Rayfoto system for sending and receiving still photographs, licensed WTMJ for operation of one of its transmitters. At that time, WTMJ became the first station west of New York to broadcast pictures of any kind. This was the initial move towards eventual broadcasting of television.

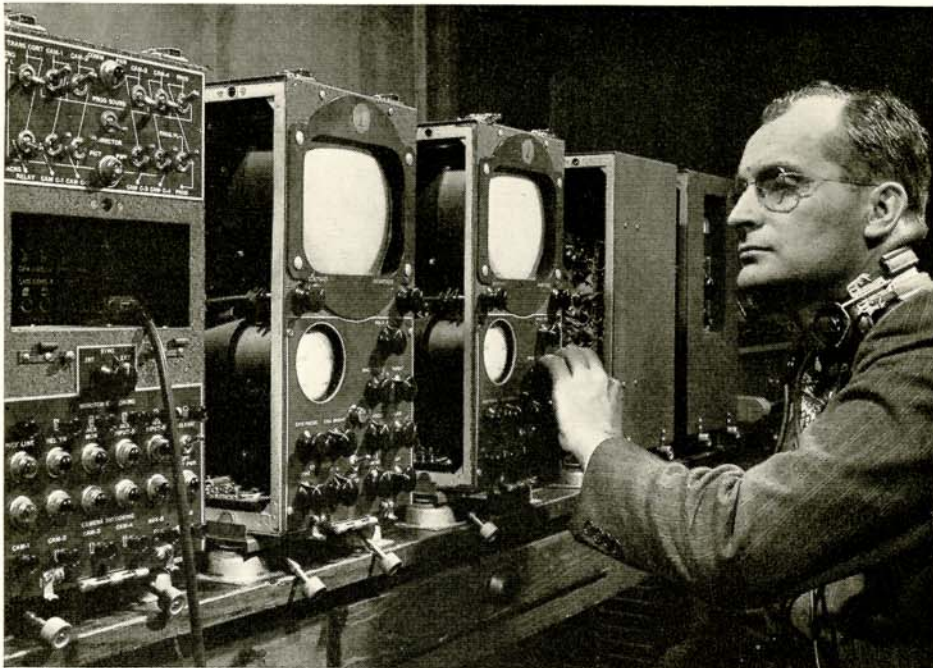
## Received License in 1931

Because of experimental work in television, The Journal Company received a license in 1931 for station



*Edwin L. Cordes, FM and Television Engineering Supervisor for the Journal Station, directs a television camera during a test program by WTMJ-TV. The station plans to go on the air in December.*





*Phillip B. Laeser, chief engineer of FM and Television facilities, The Journal Co., is shown operating television camera controls. Many years of research and experimentation in television have been carried on by Journal engineers. Now the new art becomes a reality in Milwaukee.*

W9XD. Later, as a result of difficulties in carrying out highly technical research work, the tempo slowed down for a few years. Then in 1941 a construction permit was granted for experimental television station W9XMJ, and later the same year a permit was granted for commercial television station WMJT.

Television was near at hand for Milwaukee when the war broke out and the defense communications board put out an order freezing television construction. However, The Journal Company was determined to be in the best position to resume activities when conditions permitted.

Radio City was designed as the first

structure to house all three types of broadcasting—AM, FM, and television. When Radio City was completed in 1942 as the most modern plant of its kind in the country, its largest studio was especially reserved for television. In addition a 300-foot television tower was constructed.

This tower was put to several uses by the FM and shortwave stations during the years of waiting for actual television operations to begin. Early this fall the television antenna was installed on top of the 300-foot structure.

The antenna, measuring  $69\frac{1}{2}$  feet and weighing 3,853 pounds, is an RCA 3-element super turnstile. It is the sixth

of its kind to be installed for television. Others are now in New York, Washington, Chicago, St. Louis, and Philadelphia.

The task of raising the antenna to its position on top of the tower was a big one. First, a 65-foot telephone pole had to be placed on top of the tower to bring the antenna high enough and into position. Then there was the task of carefully guiding the nearly two ton object in its ascent. Use of several ropes kept it from striking the tower as it went up.

The antenna of WTMJ-TV with its

three bays will have a power gain of four. When the station goes on the air, it will operate 5 kilowatts video power and  $2\frac{1}{2}$  kilowatts FM audio power. Only eighty percent of this power will arrive at the antenna because of transmission line losses. With a gain of four afforded by the antenna, WTMJ-TV will send out an equivalent power of 16 kilowatts video and 18 kilowatts audio.

The antenna differs from regular radio antennas in that it transmits both the television pictures and sound. WTMJ-TV will provide reception with its present antenna for an area within



*Edwin L. Cordes, FM and Television engineering supervisor for The Journal stations, televisualizes a scene during a test program at Radio City. The results appear on the television receiver at the right.*



the radius of 20 to 25 miles from the station. This will be increased in a few years when the station will build a new 500-foot tower.

A new RCA 5-Kilowatt television transmitter has been installed at Radio City. It is divided into eight relatively small, light-weight units (25 by 36 by 80 inches) allowing for a flexible layout. With a "walk-in" type construction this transmitter allows for easy inspection and servicing. Transmitter operation is simplified because of a similarity in design between the sound and picture transmitters.

The transmitter of WTMJ-TV was designed to eliminate complicated tuning adjustments, and a high-level modulation system permits the use of meter-tuned, narrow-band drivers. Radically new tubes are used in the output stages.

## New Equipment Installed

Other new equipment installed by WTMJ-TV includes a two image-orthicon field-camera, chains for remote pickups and simple studio shows, microwave relay equipment, a film-camera chain, and a studio synchronizing generator. When all television equipment is on hand, it will cost The Journal Company about \$400,000. That does not include the cost of studios, a control room, or the transmitter building.

When WTMJ-TV takes to the air in December it hopes to present about 20 hours a week of television programs. The programs will be on five days a week from Wednesday through Sunday. On the two days that the station will not be on the air, a test pattern will be put on to enable servicemen installing or adjusting television receivers to check their work. This pattern will also be on before and after transmission of programs.

The program schedule is expected to include shows in the afternoon from 1:15 to 3:00 P.M. and in the evening from 7:30 to 9:30 P.M. These times can vary, as the station will attempt to pick up public events and sports events along with regular live programs and televised movies.

## Network Programs In Sight

WTMJ-TV will have to depend entirely on its own programming as no network television is possible in the Midwest as yet. NBC, which furnishes regular radio network service, is working on a Chicago station which will go on the air in 1948. And even then the method of physically transmitting the programs to Milwaukee presents a problem.

The possibility of exchanging programs with Chicago stations for re-broadcast is being considered provided some method of transmission is found. Engineers are checking the possibility of direct reception of Chicago stations through use of the extremely high tower being constructed by WTMJ-FM at Richfield, Wisconsin. This tower, when completed, will be 550 feet high and will stand on a hill 500 feet higher than the average elevation of Milwaukee. Since television waves tend to follow the line of sight, it may be possible to use this tower for a fair degree of dependable reception from Chicago. Success in this could bring network television to Milwaukee much sooner than expected.

No longer is television just around the corner, but right on the door step. Throughout the country there are expected to be 5,000,000 viewers of television by the end of 1948 and a total of 750,000 television receivers.