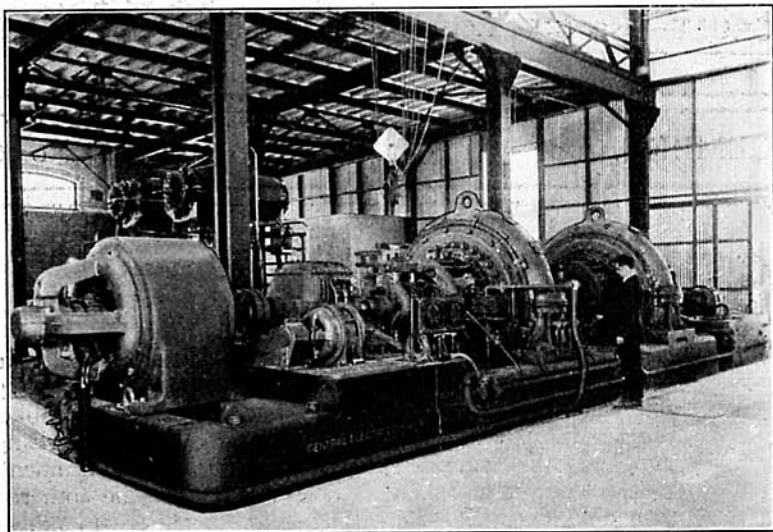


President Harding Opens the World's Largest and Most Powerful Radio Station

By PIERRE BOUCHERON



This photograph shows the two high frequency Alexanderson alternators, which are the heart of the big station. They are driven by powerful motors, one of which may be seen on the extreme left, and deliver in the antenna 200 kilowatts each.

BACK in 1897, little did Marconi think that but twenty-four years would pass when the world would be linked by radio from a central point. Indeed, this vision has been amplified a thousand fold, for when he was asked how far a dispatch could be sent, he replied, "Twenty miles."

Twenty miles in 1897—World-wide Wireless in 1921.

Seventy miles from New York, near Port Jefferson, L. I., is located Radio Central, the world's largest and most powerful station, designed and built for international wireless telegraph communication by combined engineering skill.

With the opening of Radio Central, New York becomes the focal point of world-wide wireless communication. This means that existing radio and cable facilities to such leading commercial nations as Great Britain, France, Norway and Germany are now supplemented by a direct radio telegraph service.

Commerce, as we know it today, depends upon complex and highly specialized factors for success. One of its most important agencies is communication, bringing as it does, the parts of the world within easy reach of all. Indeed, without this vehicle, world trade would fail utterly. Thus, it has come to pass that the art of radio communication has slowly but surely taken its place as a necessary supplement to present commercial circuits, and not only is Europe and the Orient covered by this American system, but the new station just opened has been designed to eventually provide an additional and direct circuit to South America, thereby linking all commercial nations together.

RADIO CENTRAL—ITS PURPOSE AND HOW IT FUNCTIONS

Unlike many industries, radio communication is essentially international in its operation and world-wide in its scope. For this reason, it has been the dream of communication engineers for several years to erect a huge transmitting station at a centrally located point in such wise as to command a world-wide field of activity. Radio Central is the realization of this vision.

In the pioneer days of high power radio telegraphy, a station functioned alternately

as a transmitter, a receiver and a telegraph office. This involved much loss of time and

greatly reduced traffic facilities, for a station had to stop sending while it received, and vice versa. It, therefore, became apparent that the ideal radio station should comprise three separate but closely connected units operating by remote control and employing a transmitting unit, a receiving unit and a central traffic office, the latter preferably in the heart of the business district of large cities.

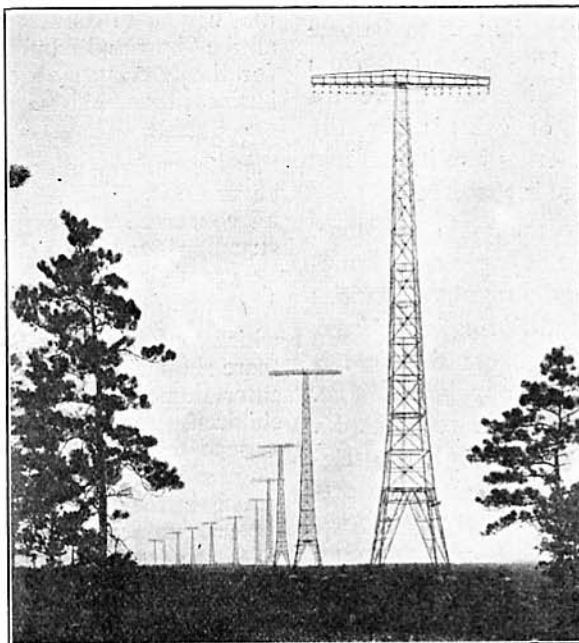
The new radio station, therefore, comprises these three units which are:

RADIO CENTRAL.—A high power multiplex transmitting station, located on Long Island some distance from New York City, planned to have several separate antennae systems each designed to communicate with a given country with telegraphic control taking place at a remote distance suitable to the handling of traffic.

RIVERHEAD, L. I.—A multiplex receiving station, also located some distance from New York, but separated by 16 miles from the transmitter and so planned and arranged as to simultaneously receive all radiograms destined to the United States from as many foreign countries as take part in the world-wide wireless system.

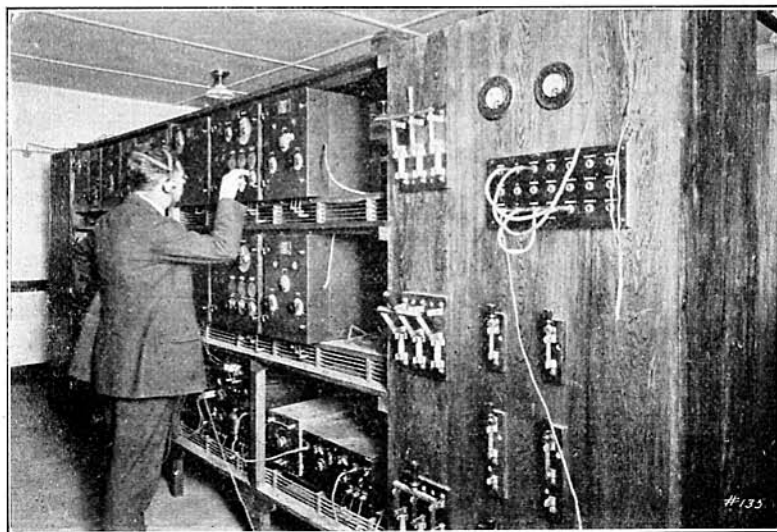
CENTRAL TRAFFIC OFFICE, NEW YORK CITY.—The traffic center of the new system where all actual radio telegraph operating takes place. Here radiograms are gathered from various sources and directly radioed to foreign points through Radio Central and other high power stations. This direct transmission is accomplished through the use of a special remote control system whereby operators at New York City do all necessary transmitting work.

In a like manner, reception is accomplished with similar direct advantages where the incoming signals are made audible at Riverhead, L. I., and automatically transferred over land-lines to the central traffic office located in the heart of New York's financial district. These signals are interpreted and recorded on typewriters by skilled telegraph operators at high speed or are automatically received by ink-recorders. Final delivery is then effected through a special messenger service from the central traffic office or its supplementary branch offices located in New York, or dispatched by telegraph when the point of destination is other than New York City.



The Twelve 450-foot Towers of Radio Central at Port Jefferson, L. I., N. Y.

Here is the receiving station of Radio Central, installed 16 miles away from the transmitter. Reception is effected on loop aeriels with sensitive amplifiers and filter circuits, eliminating interference and statics.



OUTSTANDING FACTS ABOUT RADIO CENTRAL

RADIO CENTRAL STATION is designed for World-wide Wireless communication which includes Europe, South America and the Far East.

THIS SUPER-STATION is situated at Rocky Point (seven miles east of Port Jefferson) on the northern shore of Long Island, 70 miles from New York City. The station site covers 6,400 acres or 10 square miles.

THE CONSTRUCTION of Radio Central began July, 1920, and the first test signals were sent in October, 1921, or a little more than a year, a record in itself when one considers the great amount of work accomplished.

1,800 TONS of structural steel were used to erect the first 12 towers, each tower employing approximately 150 tons.

EACH TOWER is 410 feet in overall height and the cross arm, or bridge, supporting the antenna wires at the top, is 150 feet long.

8,200 TONS of concrete were employed for the foundations of 12 towers, the base of each tower leg being sunk nine feet below the ground with a total base area of 360 square feet.

THE DISTANCE between two adjacent towers is 1,250 feet, or nearly three miles from the first to the twelfth tower.

EACH ANTENNA consists of 16 silicon bronze cables $\frac{3}{8}$ " in diameter stretched horizontally from tower to tower. In all, 50 miles of this cable has been used for the first two antenna systems.

THE GROUND SYSTEM for both antennae consists of 450 miles of copper wire buried in the ground of the entire antenna system in starfish and gridiron fashion.

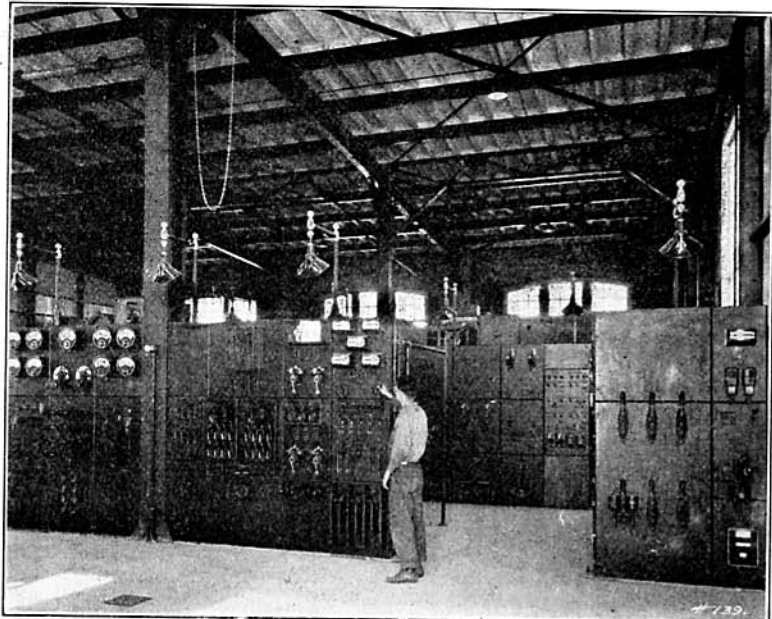
THE FIRST POWER HOUSE SECTION covers a space of 130 feet by 60 feet and accommodates two 200 K.W. high frequency transmitting alternators with auxiliaries and equipment.

A SENDING SPEED of 100 words per minute is at present possible with the use of each transmitting unit at Radio Central. This means a combined sending capacity of 200 words per minute for the two completed units.

THE ERECTION of additional antenna units forming the spokes of the huge wheel, and further improvements which are being made, will correspondingly increase the transmitting capacity of the big station.

THE TRANSMITTING RANGE of Radio Central is practically world-wide, as demonstrated by preliminary tests when the station was heard in all

Placed just opposite the alternators is this main switchboard on which are mounted all the necessary switches for the remote control of the station. On the panel in the background may be seen the manipulation relays which are operated from the New York City office.



parts of Europe, as well as Australia, South America and Japan.

THE COOLING POND for cooling the water

after it has circulated through the high speed alternators covers a ground space of 64 feet by 42 feet and is 7 feet deep. The pond is equipped with four spray heads which, when operating, present a beautiful and ornamental appearance.

THE COMMUNITY HOUSE for the staff is a low one-story building closely resembling an exclusive country club. It contains 16 single rooms, an official suite, a large living room and dining room, as well as quarters for servants.

THE ENGINEER IN CHARGE with a staff of 15 assistants comprises the personnel necessary to maintain the huge station in operation at present.

THE CONSTRUCTION FORCE has varied day to day from 100 to 250 men.

THERE ARE NO RADIO OPERATORS at Radio Central, the actual transmission taking place by remote control from the Central Traffic Office in New York City.

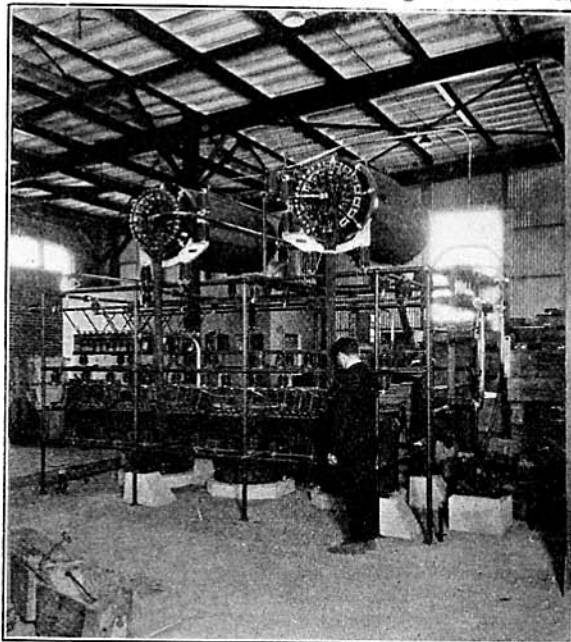
THE RECEIVING STATION, working in conjunction with Radio Central, is located at Riverhead, L. I., 16 miles away. No operators are located here, for the distant signals are first received by radio, automatically transferred to wire lines and received at audible tones at the central traffic office, New York City. The action is simultaneous from the time the signals are transmitted abroad, picked up by the aerial, to the moment of actual transcribing by the receiving operators in New York.

CENTRALIZED CONTROL, as accomplished at Radio Central and receiving station at Riverhead, has solved the problem of multiplex operation and has made possible this practical communication service now at the disposal of the American business man.

THE FINAL INSTALLATION at Radio Central will comprise 12 antenna units supported by 72 towers, forming, so to speak, the spokes of a giant wheel nearly three miles in diameter. Ten high frequency alternators will be employed, which in total will give a power output of 2,000 kilowatts or 2,700 horsepower. The electrical force thus brought into play at Radio Central permits the realization of the vision of communication engineers to transmit messages to all points of the world from a single centrally located source.

The call letters of the new station are WQK, and transmission is made on a wavelength of 16,400 meters.

During the transmission of President Harding's message on November 5, all the large stations of the world were listening in and received the message very QSA.



This View Shows the Condenser Rack, and the High Frequency Transformers Mounted on Concrete Bases are the Magnetic Amplifiers.

Front view of the power house of Radio Central, showing the cooling pond for the water circulating in the liquid rheostat and other machines. The lead in of the aerial, composed of sixteen wires may be seen on the right and above the building.

