

RADIO HAS BIG GROWTH IN YEAR

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with small power, especially at night, they have been found to be thoroughly practicable for radio telegraphic communication and promising for radio telephony. Repeated instances of transmissions thousands of miles with a few watts of transmitting power have been very astounding to the general public. It has been found that waves throughout this frequency range may be readily directed in fairly concentrated beams. In this development a great step has been made toward the solution of the interference problem.

"On the question of future developments here are some of things I anticipate for 1925:

"Beam Transmission—development of practical means of directing waves in concentrated beams in desired directions. The use of this system at lower frequencies heretofore. Adoption of this system to the reduction of interference.

"Directional reception—improvements in direction finders. Development of very directional receiving systems. Introducing another element of interference reduction.

High Frequencies

"Further development and application of the high frequencies, 2,000 to 20,000 kilocycles—the utilization and control of radio waves at these frequencies on a regular engineering basis. Increase in knowledge of the possibilities of these waves and the mode of their propagation.

"Radio relaying—perfection of means for relaying and rebroadcasting and adaption to various services, utilizing in particular the higher frequencies.

"Progress in reducing the effects of fading—improvements in broadcasting. Broadcasting to take more definite form as a distinct service as against its initial phases of novelty or pastime. Higher quality in the receiving of broadcast programs through interconnection of stations and through the use of higher power.

"Advances in receiving sets—the wider use of sets of high selectivity can be expected. While batteries give such good service as the supply for electron tubes that they are hard to displace, progress can be expected on devices for using alternating current as a tube supply.

Standardization Seen

"Radio Standardization—Elimination of a multiplicity of parts by the radio industry. Standardization of receiving and transmitting electron tubes.

"Radio Transmission of Pictures—Improvement of quality and speed of transmitted pictures through efforts of numerous investigators and companies.

"Radio Beacons—Extension of radio beacon systems for navigation by sea and air.

"General progress on many of the major problems of radio technique, such as various phases of the interference problem, radio measurements, radio wave intensity measurement and control, and reduction of the effects of atmospheric disturbances."

Chief Supervisor of Radio W. D. Terrell: "The outstanding feature in radio development during the year 1924 is the linking together of several stations by wire and by radio, making it possible to reach practically every radio listener in the United States, putting them in direct touch with the most important events of general public interest, such as the political conventions, world series games and addresses by men high in public life."

Commander J. H. Taylor, Naval Experiment Laboratory: "I think the most important development in 1924 was the work done in developing high frequencies, and I think this development will continue to be the most important for some years."

Maj. Louis B. Bender, chief of engineering and research division, United States Army Signal Corps: "I think the major development of 1924 was the progress made in the exploration of high frequencies. I think the same subject will be the big development of 1925."

Short Wave Lengths

C. Francis Jenkins, inventor: "The most outstanding event in radio the past year was the activity and marvelous accomplishments by the use of short wave lengths. The most outstanding feature of the

Try 'Em



The fan who builds his own receiver will find considerable help in these simple hints. 1. Powder your hands with some soft talcum powder before winding coils. Insulation won't come off and wires will be worked more easily. 2. Bend bus wire with long nose pliers, so that a small circle of the wire can be made for terminal connections. 3. Best connections are made with such circled connections, and the nut screwed down tight. 4. Change tubes around every once in a while. They may give better results.

coming year will be the introduction of pictures by radio in action as an entertainment in the home."

Dr. J. Harris Rogers, inventor: "In my humble opinion the great distance covered by short waves, using comparatively little power, is the most revolutionary achievement during 1924, especially as we have been taught that only long waves were practicable for great distances. I believe the greatest development of 1925 will be transmission and reception by buried antennae. By the use of such, fading will be eliminated, signal strength will be the same during the twenty-four hours, the difficulties of static reduced and owing to the marked directivity of this form of antennae, less power will be required to cover great distances. I also believe that it will be conceded, sooner or later, that communication over great distances is had through the conductivity of the earth's crust and not through the space above."

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To Maintain Your Battery

Keep the battery charged. Never lay tools on top of a battery or they may cause a complete discharge by short-circuiting it.

Add nothing except distilled water.

Acid should never be added unless some has been spilled from the cells accidentally.

Boiled water is not distilled water.

A discharged battery will freeze easily while a fully charged one will not freeze in this climate.

To find the positive and negative poles of a battery when no marks are visible fill a glass vessel half full of salt and cover with water. Run a wire from each terminal of the battery and hold them about one inch apart in the solution. Bubbles will rise from the negative wire. Also, there is usually more greenish corrosion around the positive terminal than the negative.

Never light a match and look in the vent cups. The hydrogen gas in the battery is liable to explode and cause serious injury to the eyes.

Keep the battery charged and don't let it get "thirsty."

Radio Comment

Wave lengths are changing around and shifting so fast these days that it is almost impossible to keep up with the changes, just as you think you have a careful compiled log of your receiver, away goes several stations and change their wave.

With the constant juggling of wave lengths, and a tremendous increase in spark interference, tuning is slipping back to the guess 'em period. Of course greater order will emerge from the rapidly altering ether chartings. Broadly tuned sparks in and around Indianapolis are making a miserable mess of many splendid programs. This interference becomes so strong at

times that it covers the entire broadcast range, but it is generally at its worst around 450 to 550 meters.

Indianapolis also has a great deal of local interference caused by a number of things, which, if proper steps are taken can be eliminated. The Radio Department of the Indianapolis Times is willing to cooperate with radio fans in an effort to eliminate some of this interference.

There is only one way that this

can be accomplished and that is by cooperation. Take a piece of paper, write down just exactly what you think this interference is, how long it lasts, is it continuous or intermittent, so there will be some definite clue to work upon, in this way reports in the same neighborhood can be checked against one another and it will be much easier to get at the base of the interference. Address your reports and complaints to the Radio Editor, Indianapolis Times.

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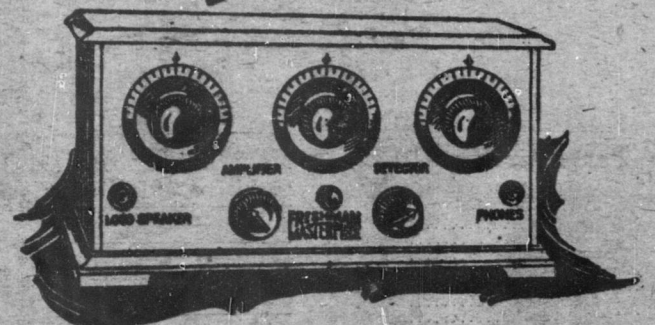
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