1923 Passes in Review

And in Passing Reminds Us that We Have Done a Business of $150,000,000—That the Vacuum Tube Business Alone Is One Fifth the Value of the Incandescent Lamp Business—That Our Entire Nation Has Heard Three of Its Presidents Speak and Suggests the Question "Who Pays?"

By J. H. MORECROFT
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AS WE look back over the accomplishments of radio broadcasting during the year just closed we can certainly feel that the rosy predictions ventured at the beginning of 1923 have been well vindicated. It doesn't seem possible for radio to continue to develop at such a rapid pace during the next few years, but then, who can say? There are still many important questions to be solved, such as—Who is going to pay? but the lack of a solution for these problems apparently does not act at all to prevent continued rapid progress.

INCREASE IN IMPORTANCE OF RADIO'S MISSION

AS WE try to put into their proper perspectives the various features of radio broadcasting which have shown development during the past year those broad questions dealing with the general utility of radio to the people at large loom big in the foreground. Is radio forcing itself upon the people of our country as a necessary part of their every-day life, or has it remained the plaything of enthusiastic youth and a source of income for a few small dealers in radio parts? The answer is, of course, evident. During the past year the people of the United States by the hundreds of thousands, have listened to the voices of three of their presidents, an event which RADIO BROADCAST spoke of a year ago as one of the great benefits radio was sure to bring to the American people.

HARDING

THE deep, resonant voice of the late President Harding was heard by more of his people than had been that of any former president. This may seem like an exaggeration when we think of the way the people used to flock to hear Theodore Roosevelt; always he spoke to crowded houses but even so, the number who heard him remains comparatively small. An audience of five thousand people is a large one; it takes a very powerful voice to be heard by such a group of people, yet when Harding spoke to the few thousands in the auditorium at St. Louis, for example, he had an invisible audience of five hundred thousand, conservatively estimated. This is as many people as Roosevelt could have addressed in possibly two hundred and fifty packed meetings, in the larger cities. In the words of the physicist, the size of the President's audience of to-day is of "a different order of magnitude" than it was three short years ago. It is five hundred times as great.

WILSON

NOT only did we hear President Harding plead with his countrymen to see the grave situation of the world with him, eye to eye, but we heard that great exponent of idealism, Woodrow Wilson, pour forth invective on

Looking Back Over the Year

Says Professor Morecroft, "In spite of some disappointments, if the next few years give us as much improvement and advance in radio broadcasting as the one just ended has done, it passes our imaginative powers to predict what its status and service may become."

RADIO BROADCAST now presents this review of radio in 1923 after the accomplishments have had time to be soberly weighed and balanced. It is doubtful that any one person in the radio art is better able to picture for us what has gone on in radio during the past year. His treatment of this vast subject is concise, clear, and very much to the point. It will give you some idea of what has been and what may be done with our infant giant.—THE EDITOR.

THE FIRST PRESIDENTIAL BROADCASTING
The late President Harding at the microphone in St. Louis, June 21, 1923

those responsible for failing to further the close international relations which he endeavored to bring into being. A remarkable example of what radio can do, was that short address of Woodrow Wilson. Due to the excellent engineering preparations of the telephone company's staff, his voice was carried by the ether ripples so faithfully that we could almost imagine he was in the same room with us. Never before (or since, it seems) have we had such a demonstration of radio's ability to conserve the quality of the human voice as it is thrown over hundreds of thousands of square miles of our country.

COOLIDGE

MORE recently we heard our present Chief Executive deliver his message to Congress, in that cool, matter of fact, modest fashion, which so well exemplifies his character. It is incomparably more interesting to hear the message delivered than to read it in the next morning's paper. We now regard it as an established custom that when any thing of great moment is taking place in the national capitol, or anywhere in the country, for that matter, we shall be "let in on it."

LLOYD GEORGE

AND not only have we heard our own leaders but hundreds of thousands had the privilege of listening to one of the world's cleverest statesmen, the one man who was able to hold his high position secure during the entire duration of the World War. Lloyd George might have addressed possibly fifty thousand people in his tour of this continent, without the help of radio; as it was, probably one million Americans heard the persuasive voice and telling arguments of the little Welsh statesman.

All this has been accomplished in an art which, only a dozen years ago, was regarded as so undeveloped that several unscrupulous promoters were seriously in danger of a long term in the Federal penitentiary for trying to sell radio telephone stock; the enthusiastic circulars promised large returns from a field of such dubious possibilities that Uncle Sam regarded the men involved as either criminals or fools. Of course such a company as that which runs WEAF can still vouch for Uncle Sam's judgment being sound when he brought to the bar of justice the promoters who so glibly proved their anticipated profits from the radio telephone game. Most broadcasting stations, as a matter of fact, would be glad to-day to have these same promoters step in and show them how to make money on their stations. Most of them have their accounts on the wrong side of the ledger and there is no one to-day with vision keen enough to point out to us how some of the items may be shifted to the other side. This is one problem which 1923 has seen fit to leave to its successors.

INCREASING THE EFFECTIVE AREA OF BROADCASTING

NOT only have the events which radio has broadcast during the past year been of continually increasing importance, but the distances covered have almost equally been extended. In the deep Colorado canyon, the engineering explorers were able to tap the all-pervading ether and listen to the activities of their fellows in spite of the fact that 2,000 feet

PRESIDENT COOLIDGE READING HIS ANNUAL MESSAGE TO CONGRESS

The two microphones on his reading desk actuated six broadcasting stations. Behind the President are Senator Cummings, President *pro tem* of the Senate, and Speaker Gillette, presiding

zines as possible devoted entirely to factory made and other receivers, taking each class of "pest" listing all known factory makes of that type, also aliases, and tell how to convert them into good sets. Give good notice to the Sodion tube and how to convert a single circuit into a good receiver, using this tube and without need of much extra parts except a potentiometer. Make it detailed for the "dumb-bells." By mentioning radiating makes of receivers specifically you are in little danger of a libel suit, for radiation can be easily proved, and the truth is a perfect defense for you.

I am an experimenter, and my interest in the music is little, with the exception of some very good music from good stations. Hence I am not a novice. But I would like a clean air to test in. Interference can be avoided by a good set, but the best types of receivers are helpless before radiating receivers.

Yours truly,

C. J. LeBel

Expensive Service

PRESIDENT COOLIDGE'S speech on Washington's birthday was not broadcast from a Chicago station, as it had been announced, because the station's manager thought the service cost too much to make it worth-while. Any broadcasting of this kind is entirely dependent upon the American Telephone and Telegraph Company who control all of the long distance telephone lines of the country. Unless their coöperation is secured, practically no broadcasting can be done from points outside the studio. Thus all of the ambitious broadcasting stations, desiring to put on the air affairs which take place at distant points, are entirely dependent on the country's great communication company.

The Westinghouse engineers, with their short wave transmission from Pittsburg to Nebraska have solved, to a certain extent, the question of remote modulator control but, of course, the Chicago station could not very well set up a short wave transmitter at the White House, to relay the speech to Chicago. The General Electric Company has used a small portable short wave transmitter to actuate WGY from points a few miles away. Such a scheme is possible, but not yet as desirable as a good telephone line connection.

So the question arose—how much should a broadcasting station be charged for the use of a long distance line for a few minutes when the President is speaking? Apparently $1000 was offered but the "asked" price did not get below $2,500, so a sale was not made. In the words of the discomfited radio station manager "the regular long distance charges for the use of wires from Chicago to Washington is only $4.80 for the first three minutes and $1.60 for each additional minute. The original plan was for the President to talk ten minutes; at the regular rates the cost of the wires would then be $14.80. Because of the necessity of having well balanced wires and other possible special care, one Chicago station offered the American Telephone and Telegraph Company $1000 for the service from Washington, but even at that figure the service was refused."

Before condemning the telephone company for its apparently excessive charge for this service it must be considered that the ordinary wire connection will not serve at all for such a purpose. Special lines and repeaters have to be taken out of regular service, have to be put through special tests and adjustments, all extraneous "noises" eliminated and a special

HOW KDKA WAS RE-TRANSMITTED IN ENGLAND

The receiving set had six stages of tuned radio-frequency amplification, detector and two stages of audio-frequency amplification. This special station is installed at Biggin Hill, near Manchester. In the photograph are, *left to right* Mr. Honri, of the British Broadcasting Company, Mr. Webb, of *Popular Wireless*, and Captain West, Assistant Chief Engineer

staff of men, as well as spare lines, be kept in readiness in case the connection should fail.

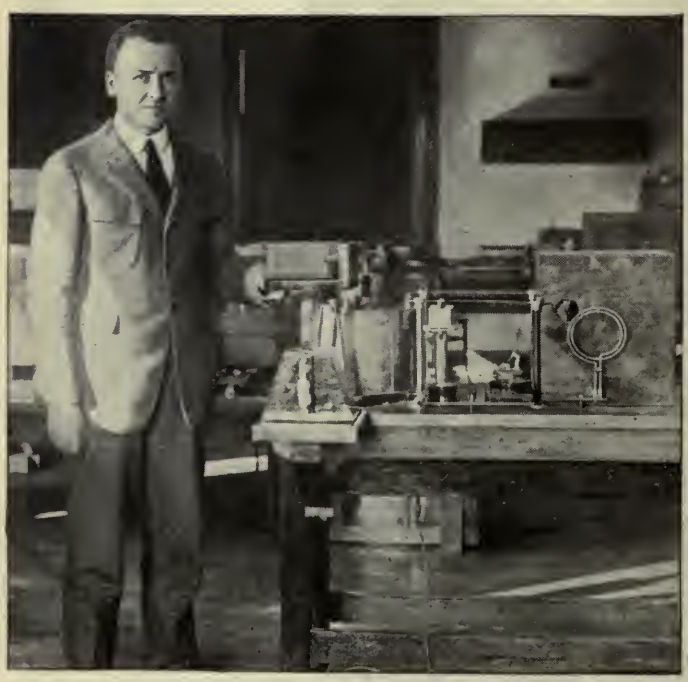
However large we may think the bid of $2,500 for ten minutes' service may be, all of the related factors are not on the surface, and we feel that the Telephone Company is entitled to the benefit of any doubt there may be, when we consider the fine radio broadcast service they have given the public during the past year. Whatever may be the policy of their financial advisors, we do know the company makes a continual effort to improve broadcasting service. This has been of great benefit to the radio public—a public which so far has paid the Telephone Company nothing at all for the service. It is well to remember also that the radio receipts of the American Telephone and Telegraph Company are practically nothing at all whereas an organization like the Radio Corporation has an income from the radio public which must be measured annually in the tens of millions of dollars.

Good Work by the Bureau Physicists

A FEW of the workers in the field of radio development have received rich material rewards for the successful solutions of certain radio problems. We think at once of Armstrong, Pupin, Hazeltine, and others. Other workers spending months and years upon the solution of problems of great importance in the advancement of science, in the saving of lives, prevention of shipwrecks, etc, receive practically no direct financial reward when their work is successfully completed. Among such workers must be reckoned most of the research workers in University laboratories and certainly those on the staffs of such institutions as the Bureau of Standards.

Much valuable work is done by the physicists of the Bureau. This is the kind of work that practically never brings much remuneration to the worker. Tests on the applicability of short waves for radio transmission were carried out at the Bureau quite some time ago. This work is and has been of great value to such companies as the Westinghouse which, of course, gets credit from its radio audience for putting into operation the remarkable short wave channel from Pittsburg to Hastings, Nebraska. This work of the Westinghouse engineers naturally deserves much approbation, and it does get it, whereas the work of the Bureau scientists remains unknown except to a few who happen to consult the bulletins describing the work of the Bureau.

There has recently been published by the Bureau, Scientific Paper No. 480, describing a new type of radio beacon station, and its use in the navigation of aeroplanes. Ordinarily an aeroplane is guided to its port by the use of a directional radio receiver mounted on the plane itself; generally two coils at right angles, the scheme attributed to Bellini-Tosi, is employed. It is by no means easy to carry on accurate directional measurements on a noisy aeroplane, going at its tremendous speed. The Bureau workers set out to find a more easily manipulated scheme for the plane's pilot.



DR. J. H. DELLINGER
Of the Bureau of Standards with the standard wavemeter at the Bureau laboratory in Washington

This pamphlet gives the results of a series of experiments made with the view of not requiring directional measurements on the plane itself. All the operator on the plane had to do was observe the signal intensity. The sending station uses two large coil antennas, mounted about 135 degrees apart. On the plane, a simple non-