The Transatlantic Broadcasting Tests and What They Prove

How the Tests Originated, How They Progressed, and What Went on at RADIO BROADCAST'S Receiving Station in Garden City

EXCERPT FROM MR. OWEN D. YOUNG'S SPEECH, TRANSMITTED THROUGH WGY, WHICH OPENED THE AMERICAN TRANSATLANTIC TESTS

Friends and neighbors of Europe and America, I greet you from station WGY in behalf of the radio enthusiasts of America and in the name of RADIO BROADCAST, *under whose inspiration and direction these transatlantic tests are being carried out.*

First, let me send to the engineers of the world the congratulations of the technical concerns of America. Your efforts have made possible these first steps in international communication, which, in the end, will make all the world one neighborhood. We shall have understanding in place of misunderstanding. We shall have relationship of neighbors in place of the relationship of strangers. Men who talk with each other daily, with the object of better understanding, do not fight. Let these international conversations go on. Let the work of the engineers go on.

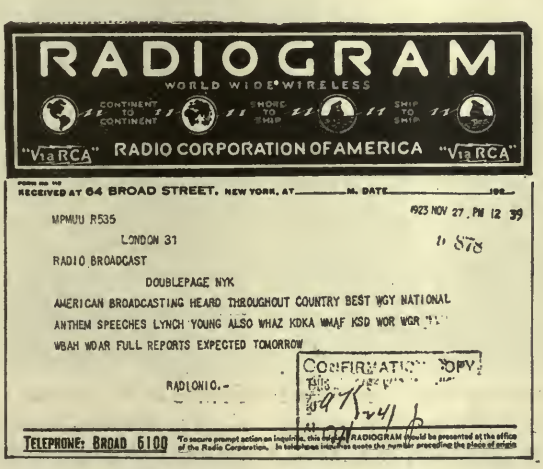
Next, let me say a word about the radio amateurs of the world, for they are engineers in the making. The greatest asset of any new art is to have the youth of the world interested in its development and confident of its future. The greatest inventions have been made by men under thirty. Hundreds of thousands of young men in this country are interested in and at work on radio. Future inventive genius of the world is preparing to add its great contributions. Radio is to-day the debtor of many young men, once amateurs, now great inventors. The amateurs of to-day will be the inventors and engineers of to-morrow; not only from the great research laboratories, but from that little spare room in the attic and that old work bench in the cellar will come new and great discoveries. Let the work of the amateurs go on.

Peace can come through voluntary disarmament only when, and to the extent that, we substitute instruments of international communication for instruments of international destruction. Engineers develop instrumentalities. They are not responsible for their use. Whether instruments shall be used for peace or war depends not upon the engineer, but upon the public opinion of the peoples of the world, and informed public opinion rests upon adequate communication.

The coöperation of the scientists and engineers of all nations to render a service to all peoples sets an example for the politicians and diplomatists of the world. Will the politicians follow that example?

ON SUNDAY night, November 25th, a stage was set such as the world had never known before. This stage was built of rock and earth and ocean, with the moon and stars as spot-light and border-lights, and with a good part of the entire English-speaking world as audience.

For the first time in history, the man-in-the-street in England and his brother layman in the United States were enabled to listen to each other's voices.



RADIOGRAM

WORLD WIDE WIRELESS

"Via RCA" RADIO CORPORATION OF AMERICA "Via RCA"

RECEIVED AT 64 BROAD STREET, NEW YORK, AT ____ M. DATE ____ 192_

1923 NOV 27 PM 12 39

MPMUU R535

LONDON 31

RADIO BROADCAST

DOUBLEPAGE NYK

AMERICAN BROADCASTING HEARD THROUGHOUT COUNTRY BEST WGY NATIONAL ANTHEM SPEECHES LYNCH YOUNG ALSO WHAZ KDKA WMAF KSD WOR WGR [illegible] WBAH WOAR FULL REPORTS EXPECTED TOMORROW

RADLONIO.-

CONFIRMATION REQ'D

TELEPHONE: BROAD 5100

SHOWING HOW WELL ENGLAND HEARD US

And when the clocks of the Eastern and Middle-Western sections of this country struck ten, and farther west, nine, thousands of receiving sets were tuned to the wavelengths of the eight stations of the British Broadcasting Company which transmitted to American listeners as the first step in the seven-day international broadcasting tests arranged by RADIO BROADCAST, in conjunction with the *Wireless World and Radio Review* (London). Aiding these two publications were the resources of the

OWEN D. YOUNG

Chairman of the Boards of Directors of the General Electric Company and the Radio Corporation of America. Mr. Young opened the transatlantic broadcasting from this side

British Broadcasting Company and of our National Association of Broadcasters, besides the many American stations which signified by telegram to RADIO BROADCAST their eagerness to coöperate in these great scientific tests. International broadcasting on a large scale had never before been tried, and broadcast listeners throughout America were at the highest pitch of excitement to know whether or not *their* sets could pick up the faint signals from abroad.

The English listeners were no less enthusiastic, although the difference in time brought the beginning of their tests literally to "Three O'Clock in the Morning." Small wonder then, that this familiar music-hall piece found a significant place on many of the British programs.

HOW THE TESTS ORIGINATED

UPON his return from a trip to England a few months ago, during which he made a detailed study of radio broadcasting there, Mr. F. N. Doubleday, President of Doubleday, Page & Company, made the suggestion at one of the weekly meetings of the editors of his magazines that it would be extremely interesting, and stimulating both to the progress of radio and to international friendship, were it possible for RADIO BROADCAST to arrange a program of broadcasting from this country to England.

After a rather extended discussion, the suggestion was made that two-way broadcasting, instead of one-way tests, be attempted. A working plan was outlined by this magazine and submitted to Hugh S. Pocock, Editor of the *Wireless World and Radio Review* of London. Mr. Pocock brought the proposal to the attention of the British Broadcasting Company and an agreement was made between that company's chief engineer, Captain E. P. Eckersley, and the two radio magazines, to carry out the plan.

Mr. Pocock and Captain Eckersley arranged all the details in England and immediate steps were taken to secure the coöperation of those interested in radio in this country. Inasmuch as National Radio Week would come at a time when atmospheric conditions would be favorable, it was decided to hold the tests as a feature of the National Radio Week program.

Newspapers all over the country were quick to appreciate the importance of this international program and were most generous with their space. In New York, for instance, the Associated Press, the United Press, and the International News Service spread abroad over their wire lines daily stories relating the details as they developed.

WHO WAS TO SPEAK FOR AMERICA?

NATURALLY, when it came to inviting speakers to broadcast messages to England from this country, our first thought was of the President. And we visited the White House in an effort to have Mr. Coolidge address the people of America and England simultaneously. Mark Sullivan, of Washington, the internationally known writer on politics, acted as RADIO BROADCAST'S representative at the Capitol. Unfortunately, there was not time enough to arrange the diplomatic details necessary for an arrangement, entirely unprecedented, of this kind.

Similar diplomatic obstacles prevented the Prince of Wales and Prime Minister Baldwin of Great Britain from speaking. As the most influential single man in the radio field in the United States, we looked to Owen D. Young,

Chairman of the Boards of Directors of the General Electric Company and the Radio Corporation of America, to open the international program for America. Through Mr. Stuart Crocker, assistant to Mr. Young, we learned that Mr. Young would be glad to aid our program in any way he could.

When we brought our plans to Major-General James G. Harbord, President of the Radio Corporation, he, too, was quick to lend his generous aid.

The romance of this attempt at international communication appealed very strongly to Mr. Henry Ford. Every American knows that Mr. Ford is credited with making the impossible possible in the automobile industry, and he was so much in sympathy with this first attempt at linking nations by voice that he agreed to address the people of England and America through his own station at Dearborn, Michigan—WWI. In securing Mr. Henry Ford's coöperation, we were greatly aided by Mr. Samuel Crowther, Mr. Ford's biographer.

One of the most important addresses made during these tests was that of Charles Evans Hughes, Secretary of State, on Friday night, November 30th, in Philadelphia, before the American Academy of Political and Social Science, and broadcasted by WDAR in that city.

Although we have held our presses until the last minute in order to give our readers as detailed a report as possible, the programs from the English broadcasters have not come through in full. Each American broadcaster had full charge of arranging his own transatlantic program.

However, Governor Hyde of Missouri spoke for fifteen minutes from KSD in St. Louis, and British Vice-Consul Hyde and Mr. Frank Conrad, Chief Engineer of the Westinghouse Electric and Manufacturing Company, made addresses from the Pittsburgh *Post* studio which were put on the air by KDKA.

On the nights of the American transmission, the most powerful broadcasting stations on this

"THE FIRST NIGHT"

Scene: RADIO BROADCAST laboratory, Garden City, L. I., where two super-heterodynes and a six-stage tuned radio-frequency receiver occupied the attention of (left to right): George J. Eltz, Jr., George Toohill, A. J. Haynes, Paul F. Godley, C. L. Farrand, and the editor of this magazine

side of the Atlantic were invited to send special programs from ten to ten thirty, Eastern Standard time. And every broadcast listener knows how many of these stations prepared excellent programs and put them on the air.

The day following each of the American transmissions, the British Broadcasting Company and the *Wireless World* advised RADIO BROADCAST by radiogram of the American stations which were heard best in England. Shortly before the final two-way test, we chose the American stations to send the final program to England from these reports of good reception in England.

MARTIN P. RICE

Director of Broadcasting of the General Electric Company, whose whole-hearted coöperation went a long way toward making the tests successful

The list of American broadcasters sending on the first three American test nights would be excessively long. But the stations selected for the two-way communication on the last night were: WGY, WOR, KSD, WGR, WTAM, WOC, WSAI, WHAZ, WJAZ, and WGI.

In concluding the American participation in these international tests, Major-General James G. Harbord, President of the Radio Corporation of America, spoke to the people of England for five minutes over a special telephone wire from New York city through WGY in Schenectady.

Burton J. Hendrick, Associate Editor of *The World's Work* and biographer of the late Walter Hines Page, addressed the people of the British Isles through WOR in Newark.

COÖPERATION BY AMATEURS, COMMERCIAL STATIONS AND BROADCASTERS

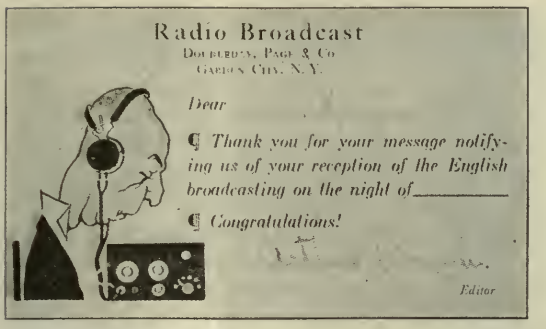
WITHOUT the help of amateur and ship and shore operator, broadcaster, and radio executive, the tests would have failed utterly. And what help they gave! RADIO BROADCAST has always maintained that the radio amateur is ever willing to assist in any activity contributing to the development of the art. Of this, no greater proof could be had than the fact that during the entire week not a single complaint against amateur interference was made.

Because the wavelengths of some of the broadcasting stations are very close to those used for ship-to-shore commercial traffic, interference with radio programs is sometimes experienced. Unfortunately, this is at present a matter quite beyond the control of either ship or shore stations. Five minutes before the first transmission from England began, we communicated with the Marine Superintendent of the Radio Corporation and requested that he send a service message to his ships asking them to remain silent for the half-hour period of the tests, except in case of an emergency. Our request was complied with and interference from this source during the week was practically negligible. A similar request, made to Mr. C. J. Pannill, President of the Independent Wireless Telegraph Company, received the same courteous attention.

Our most serious problem was to secure the coöperation of the broadcasters themselves. With approximately six hundred broadcasting stations in the country, this seemed an almost hopeless task.

Mr. Eugene F. McDonald, Jr., President of the National Association of Broadcasters, and Mr. Paul B. Klugh, the Association's executive chairman, were apprised of the campaign and their help was enlisted. The National Association took it upon itself to secure the coöperation of all the broadcasters numbered among its members. Almost before the sun went down on the day the Association decided to coöperate, the announcers of some of the best broadcasting stations in the country were telling their radio listeners of the great experiment to come.

Our attempts to keep the American broadcasters silent on the first two nights of the



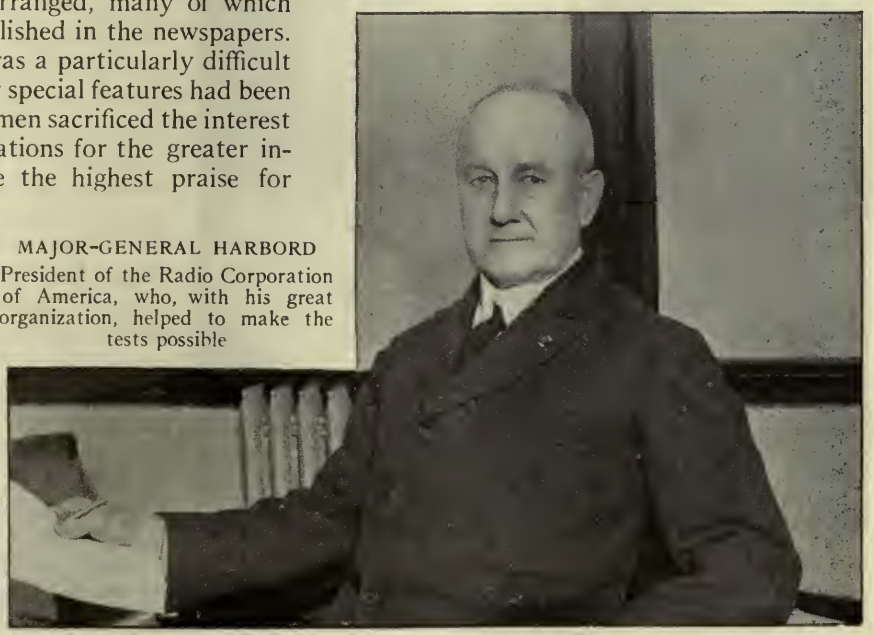
CARDS LIKE THIS WENT TO ALL WHO REPORTED HEARING ENGLAND

English transmission were only partially successful. We appealed to the President of the National Association of Broadcasters to communicate with all his member stations by telegraph. He advised them to broadcast an announcement requesting listeners-in to communicate with other stations in their vicinity asking them to remain silent during these eventful half-hours. That night, at our own laboratory, we heard this message flung out over the country. The result was almost absolute silence on the last and most important night of the tests. Could a more convincing demonstration be had of the effectiveness of radio broadcasting in reaching every section of the country?

Having to act on such short notice was a great hardship on most of the directors of the broadcasting stations. Most of them had complete programs arranged, many of which had already been published in the newspapers. Thanksgiving night was a particularly difficult one to handle. Many special features had been arranged. But these men sacrificed the interest of their individual stations for the greater interest. They deserve the highest praise for their coöperation and resourcefulness in making these eleventh-hour shifts in their programs.

In order that both sides of the broad Atlantic might know exactly how the tests were faring at all times, it was necessary to have a rapid means of inter-communication. The voice tests were pure experiment. But transocean radio telegraphy was not. So the well-established radio telegraph came to help out the infant radio telephone. General Harbord put the transatlantic service at our command and a direct wire was installed between the Broad Street Radio Central office in New York and RADIO BROADCAST laboratory at Garden City. The British Broadcasting Company and Marconi House, London, were connected by a similiar wire so that not an unnecessary second was lost in communication between the two countries. As an instance of the effectiveness of this circuit, during the tests from England on the first night, we were receiving speech which we believed was from London but which we could not understand. A request that a piano be played was winged over the radio telegraph circuit across the Atlantic. Just three minutes later a pianist in London was playing, and we were listening to the music in Garden City in common with hundreds of others whose reports have reached us by telegraph and mail from as far west as Davenport, Iowa.

Any visitor to the RADIO BROADCAST offices during the test week would have been as deeply impressed as were the editors with the phenomenal interest shown by listeners-in in every corner of the nation. Telegrams, letters, post cards and a host of local and long distance telephone calls, poured into the office night and day, each with their story of English reception.



MAJOR-GENERAL HARBORD
President of the Radio Corporation of America, who, with his great organization, helped to make the tests possible

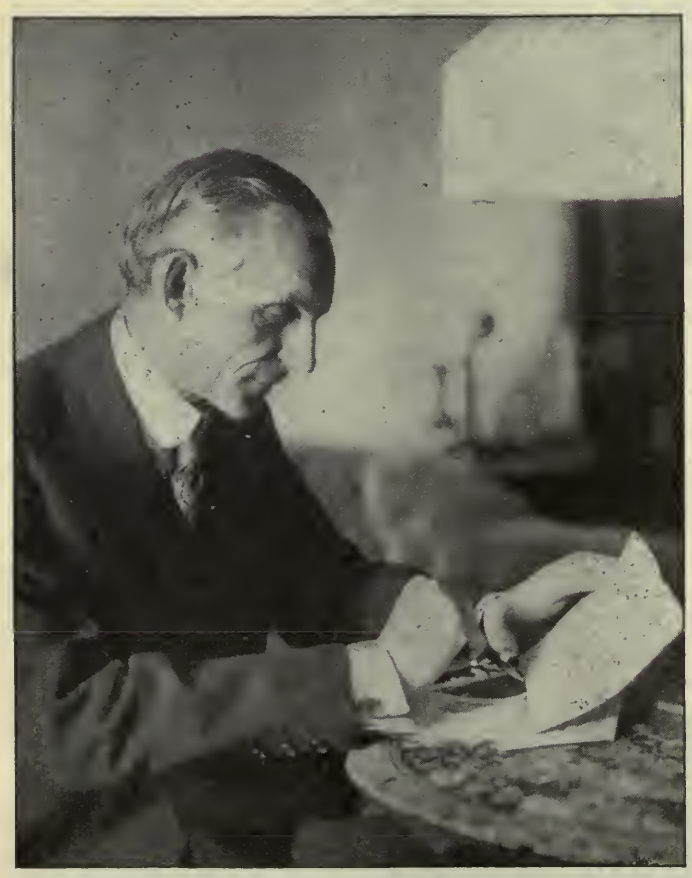
The broadcast listener was alert, capable, and extremely willing to do his bit, even to the extent of considerable expenditure for telegrams and long distance phone calls. For instance, one youth in Connecticut had a telegram in our office ten minutes after a British program had finished, reporting his reception of it.

In order to facilitate communication of this character, Commercial Vice-President C. A. Comstock of the Postal Telegraph-Cable company agreed to use every facility of his company, through careful instructions to his district office managers, to hasten the delivery of messages from listeners-in in various sections of the country to the Garden City laboratory.

SPECIAL RECEIVING STATIONS

ALTHOUGH every effort was made to have the receiving station in RADIO BROADCAST laboratory the finest possible, we wished to enlist the best radio aid in this section of the country in receiving England. On the first night of the test, in RADIO BROADCAST's Laboratory, Paul F. Godley (best known to American fans through his successful reception of American amateur signals, in Scotland, in November, 1921) and C. L. Farrand (Mr. Godley's associate), operated a specially constructed tuned radio-frequency amplifier receiver employing a three-foot loop antenna. George J. Eltz, Jr., manager of the radio department of the Manhattan Electric Supply Company, used a nine-tube super-heterodyne which he constructed especially for the test. A. J. Haynes, Vice-President of the Haynes-Griffin Radio Service, Inc., operated a seven-tube super-heterodyne, which was also constructed for these tests. All of these receivers picked up English signals.

On the last night of the tests, Frank M. Squire, Chief Engineer of the De Forest Radio Telegraph and Telephone Company, picked up England on a six-tube reflex receiver.



HENRY FORD

Who spoke to England from his own station, WWI, at Dearborn, Michigan, on November 30th. Mr. Ford had never made a radio address before

Located outside of New York and communicating with our laboratory, were Dr. Walter van B. Roberts, of the Palmer Physical Laboratory, Princeton University, with a super-heterodyne of his own design. Dr. L. M. Hull of the Radio Frequency Laboratories at Boonton, N. J., operated a six-stage tuned radio-frequency receiver. Engineers of the General Electric Company moved a receiving station from Schenectedy to a point outside the city in order to get better signals. Besides these, Mr. Frank Conrad, Chief Engineer of the Westinghouse Electric and Manufacturing Company, listened-in at Pittsburgh, Pa. Several of the students at Rensselaer Polytechnic Institute at Troy, N. Y., used a 12-tube super-heterodyne of the resistance-coupled type.

Operators at most of the broadcasting stations kept us advised of the results they obtained. At Station CFAC, Calgary, Alberta, operators used a ten-tube super-heterodyne. Operators at WOC, Davenport, Iowa, WOR, Newark, N. J., and KSD, St. Louis, also advised us of their success.

DIFFICULTIES AND ADVANTAGES IN ENGLAND

THE difficulties in arranging this test were not only electrical, but physical. It is well-known that radio signals cover much greater distances at night than during daylight hours. For this reason, it was thought advisable to run the tests during a period when complete darkness prevailed between the English stations and the United States and Canada. From 10 to 10:30 P. M. Eastern Standard time, the period chosen for these tests, is 7 to 7:30 P. M. on the West Coast and from 3 to 3:30 A. M. in England.

Picture the problem of the British Broadcasting Company. They had eight stations, joined by land wire to the central offices in London. They had large staffs to maintain, during these extra hours. An additional force of experts was required at their central office to handle the mass of detail incident to keeping the whole eight stations running smoothly. Besides, the strain on the operators and managers was considerable. Not only had they to broadcast during their usual hours, but each night for a week the entire crew was kept up until at least four every morning with American transmission and reception.

Besides this, the telephone exchanges leading into the Broadcasting Company's offices were positively clogged with calls after and during their tests. There was also an enormous influx of mail from British listeners.

There were, however, four distinct advantages that British listeners had over those in America. All the British stations were under single control. There was, then, no interference from other broadcasting stations in England. Oscillating receivers, which proved a serious source of interference in cities in the United States, are prohibited by law in England. Furthermore, the American stations used a great deal more power to transmit than the English. And finally, the arrangement of programs offered slight difficulty to the English also, since all the stations were controlled at one office.

SENATORE GUGLIELMO MARCONI

At 3 A.M., London Time, November 28th, he addressed the American listeners-in through the eight stations connected by land lines to the central office in London

It would seem that it must be a notable event indeed which would keep Guglielmo Marconi, whose speech was recorded in this country, up until three o'clock in the morning. Senatore Marconi, in his radio address, mentioned this significant fact: it was just twenty-two years ago in December that the experiment took place wherein he received from Poldhu, England, that eagerly awaited letter "S" at St. Johns, Newfoundland.

A WRECK OF PLANS AVERTED

ONE of the most serious situations we had to deal with presented itself on Thanksgiving morning. The tests conducted from England the night before had been quite unsatisfactory, due to the failure of many of the American broadcasting stations to shut down, together with unfavorable atmospheric con-

ditions on this side. The British Broadcasting Company then decided to conduct no more tests until the last night. Before their radiogram to this effect was received, we had telegraphed all over the country requesting broadcasters to maintain the silence periods on the last two remaining nights of the tests. The prospect of reception from the other side seemed excellent. Then came this startling message from England: *Reception still good no more tests until attempt at two way communication December first as per program—British Broadcasting Company.*

At twelve o'clock, we sent a message to both the British Broadcasting Company and the *Wireless World*, stating that we had secured much better co-operation and that listeners-in throughout America were waiting for them to transmit. After waiting two hours for a reply, we asked Mr. W. A. Winterbottom, Traffic Manager of the Radio Corporation to send a service message to the traffic manager in England exhorting him to get in communication with Captain Eckersley of the British Broadcasting company, or Mr. Pocock of the *Wireless World* by telephone. Within another hour, we had received this reply: *Doublepage New York — London 363 Bournemouth 385 metres 3 to 330 AM GMT— British Broadcasting Company.* A deep sigh of relief then was breathed. Service of this kind almost surpasses belief.

EUGENE F. McDONALD, JR.
President of the National Association of Broadcasters, who helped to keep American stations off the air during the British transmitting periods

The space available does not permit us to detail the story of receiving England on all the test nights, but perhaps the account of the first night of receiving from England will interest thousands of other listeners in all sections of the land.

After spending a day installing the receiving sets and making preliminary tests, three complete receivers at our laboratory were ready to listen-in for the English broadcasts. Radio Broadcast's new laboratory was rushed to completion for the tests, but the electric light installation had not been completed. Mr. Godley and Mr. Farrand operated their receiver in a room opening off the laboratory, aided by the glow of a kerosene lamp. Beside them, operating the land wire between Radio Broadcast and Radio Central, Broad Street, New York, was Willis K. Wing, of the Radio Broadcast staff. Behind them, in the semi-darkness, representatives of most of the New York newspapers and news services as well as foreign correspondents of English papers were gathered, eagerly awaiting the first faint British voice. At one side were the press photographers with camera and flashlight gun. Two of the most interested spectators in the laboratory were Mr. F. N. Doubleday, and Nelson Doubleday—both ardent radio enthusiasts.

In the laboratory itself sat Mr. Eltz and Mr. Haynes at their respective sets. For a half hour before the test period, the visitors were entertained by music picked up from all over this country as the operators tuned-in to get their bearings on the wavelengths and dial setting on which they would be most likely to pick up the English stations.

"HELLO, AMERICA!"

IMAGINE yourself with us in the new "shack" that night. It is five minutes to ten. The first stroke of the time signals from Arlington booms in on the loud speakers. As each second brings the start of the test nearer, you feel the tension increase. You hear the long dash. It is just ten. Now. . . . Loud speakers are abandoned for headphones. The faint click of a filament rheostat seems as loud as a shot. Fifteen minutes pass. The only stations heard are those Americans which unwittingly continued to broadcast. No word is said, but the waiting newspaper men detect an occasional frown on the faces of the tense operators which tells plainer than words that so far, there's "nothing doing."

Now the operators bend over their receivers and manipulate their dials most delicately. Speech is heard, but they cannot understand it. They are asked to hold their receivers to the same wavelengths, while a radiogram is sent to London asking for piano solos. Three minutes pass. Faint but clear come the notes of the piano playing in distant London. The operators catch the now famous: "Hello, America" and the newspaper men leave hastily to telephone to New York. Success! In another minute—literally—Radio Broadcast's congratulatory radiogram is in London.

WHAT THESE TESTS PROVE

INTERNATIONAL broadcasting is now no longer an idle dream, but a fact. Now we can expect its rapid development. These developments may not make it possible for the owner of an average receiver to listen-in on London at will. It may first be necessary to abandon our present system of direct broadcasting for some form of re-broadcasting. By this plan, the waves from stations operating in England, or even other countries, would be picked up by sensitive receivers here, amplified and sent out by any of the stations we now hear.

Before this kind of international broadcasting can be realized, there are many technical difficulties which must be overcome. But by this arrangement, it would be possible, as Marconi himself has already suggested, for the owner of a modest crystal set, over here, to receive speech and music from Europe.

If we are not content to postpone international voice communication until this re-broadcasting system has been completed, these tests have absolutely proved that broadcasting stations of higher power than those used in Great Britain are essential. For American stations of more than average power experienced little difficulty, in general, in reaching England, whereas the English stations operating with comparatively low power did exceedingly well to be heard in this country at all.

Heretofore, the need for high-power transmitters has not been felt in England, due to the fact that their stations have been designed to serve a territory much smaller than ours.

A better apportionment of wavelengths is an unquestioned necessity to overcome the

(*Continued on page 195*)

AT RADIO CENTRAL, NEW YORK

W. A. Winterbottom, Traffic Manager of the Radio Corporation, looking over the tape used on the Wheatstone transmitter in sending messages to England directly from the RADIO BROADCAST laboratory, notifying the British broadcasters of their success in reaching America

THE HOUSE THAT RADIO MADE

A view of the Dixon ranch at Stevensville, Montana, taken Thanksgiving Day, 1922. In the spring of 1922, the house was radio-less. Now it contains broadcasting station KFSR and amateur stations 7IT and 7ACP

What Radio Means at a Rocky Mountain Ranch

A Story of the Remarkable Change that Twelve Months Brought in a Remote Home in Montana

By ASHLEY C. DIXON

FAR out in western Montana, under the shadow of the mighty Bitter Root Mountains, lies a little valley some ten miles wide near its center and about seventy-five miles long. Similar in many respects to dozens of other ranching valleys of the great northwest, it might well be the scene of any of the present-day stories which have such an appeal to the Eastern reader: stories of cattle, of irrigation, or of the "Winning of the West."

Such spots are always described as smiling with the goodness of nature. The air is warm and dry. The sun always shines, and the hardships of city life are unknown.

In part this is true. But there is another side to the changing seasons which mark the cycle of the sun's passage to the winter solstice. The summer is comparatively short. Autumn comes early in September, and following close upon the light frosts comes the Rocky Mountain winter. Then nature shows her other side, and for months the fields and ranch houses lie under a mantle of snow. The soft music of the summer breeze is replaced by the roar of the northeast wind bearing its burden of fine stinging snow. Roads drift feet deep in hard-packed ice particles. Cattle band together for mutual warmth and protection, seeking the shelter of the cotton-wood clump on the creek bottom.

To the Bitter Root Valley came an Eastern

family about thirteen years ago, just as thousands of others have come to trade the hardships and comforts of Eastern city life for the entirely different hardships and comforts of the West. The ranch home with its large room and its big open fireplace, took the place of the city house. Alfalfa, fruit, and livestock replaced the office desk, and the rumble of the streets and clang of the trolley were forgotten.

There were compensations to make up for everything left behind save one thing alone. No one who enjoys concerts, opera, or addresses by the leading minds of the nation can ever find a substitute for the pleasure they give. While living in a great city such forms of entertainment are taken as a matter of course. One does not realize what they really mean till they are not to be had. And winter is the season of music.

We, the above-mentioned family, put in eleven long mountain winters. The days are short in the northwest country, and night comes in what used to be considered mid-afternoon. There were books to be read, cards and other games, and the phonograph. No physical comforts were lacking around the evening fire, but something was lacking, a part of the old life was gone with nothing to take its place. Then came radio!

A year ago last May we began to hear of the wonders of the radio receiver, and how one could light certain lamps contained in a box, after properly hooking the box up to a wire outside the house, turn a few dials, and listen to music. Wonderful! We had never seen such a box, nor did we know whether the lights in it were arc lamps or just the ordinary household electric lights. But no matter what the type or kind, if they would bring the outside world to us over the mountains and through the miles of snow covered pines, we wanted some of these Aladdin's Lamps of radio.

Advice was sought, but very difficult to get.

Has This Happened Yet to You?

Says Mr. Dixon: "In September, 1922, we lighted our first tube. To-day the son is a licensed commercial radio operator, and the writer holds an amateur license. Each has his own transmitting set with which communication is had every night with other amateurs in the western half of the United States."

FIFTEEN MONTHS AGO THIS ROOM CONTAINED NOTHING
More technical than a ¼-KW sewing machine.

"THE FLOWERS THAT BLOOM IN MONTAN', TRA LA . . ."

And what we could get was of the most discouraging kind. "Bring radio waves over 10,000-foot mountains and down to the floor of the valley? Impossible." The antenna (that wire we had heard about) would have to be a couple of hundred feet high, and even then we would probably find we were in a "radio shadow," and the trouble and expense would be for nothing. Hope was blasted, and for a time we gave up the idea.

While in Missoula one day in June we happened to get into conversation with a music dealer friend. He had a picture of a radio receiver which he contemplated taking the agency for. But he, too, had heard adverse reports about what we could expect, and was hesitant about taking up the matter.

A few days after our conversation with this gentleman, we departed for California on a vacation trip. Radio was still a topic of interest, and we intended to find out just what we could learn about its wonders while in San Francisco. There were radio stores and department stores handling radio receivers and supplies. We made life miserable for many a good-natured clerk asking this and that. We saw for the first time some of the mysterious boxes, and learned that the "lamps" were called tubes, and were not the garden variety of tungsten light. We were told by ambitious salesmen that we could expect to get something every once in a while, even in the mountains, if we would buy this or that particular set. The advice was taken and appreciated, but having in mind the picture of the set we had seen in Missoula, no purchase was made.

In July, after our return, the music dealer and the writer determined to take a wild chance, and order a radio set each. The local Forest Ranger was hunted up and asked permission to get a couple of poles out of the forest preserve. Several pages might be filled with the story of how we got these poles down from the mountain side and set up in the ranch yard. Antenna wire was bought in Butte, and finally everything was ready to hook on the little box.

It was evident that the radio set we had decided upon enjoyed a measure of popularity, as the factory could not fill our order for over two months. But all things have an end, and in September our box of tricks came. It was carried thirty miles from the city to the ranch and set up as per directions that afternoon. Evening, only a few hours off, seemed days in coming. Fear and anticipation alternated, and we had but little hope that our gamble against nature, with a man-made machine, would be other than a total loss.

"This is KDN, located on the Fairmont Hotel. Our next selection will be 'Three

O'Clock in the Morning.'" KDN! Fairmont Hotel! Why, KDN and the Fairmont were in San Francisco, eight hundred miles away. The Fairmont was where we had stopped just a few weeks before. And wonder of wonders, the son in the family had visited the studio of KDN, had talked with the announcer, and his was the first voice of the air to be heard on our new set, easily recognized as the same voice heard in person a short while before. Open before us was a vista of the winter to come. Gone was the fear of winter and its snow. KDN had voiced the promise of delights to follow!

KDN is gone, and the mighty KPO has taken its place. Now the thunder of Hale Brothers' organ, received, amplified, and released through a loud speaker, all located in a little back room called our "den," fills not only the living room, but the entire house with its melody. WJAZ of Chicago, KHJ of Los Angeles, WGM and WSB of Atlanta, WWJ of Detroit, and now and then KDYX of Honolulu, as well as a host of others, have all contributed their share to the long winter evenings' entertainment. But never will anything sound as sweet to us as did that particular "Three O'Clock in the Morning," from old KDN.

The writer would wish to stop here, as anything to follow seems to him an anti-climax. However, a tabloid sketch of radio progress on this ranch might be of interest. In September, 1922, we lighted our first tube. To-day the son is a licensed commercial radio operator, and the writer holds an amateur's license. Each has his own transmitting set with which communication is had every night with other amateurs in the western half of the United States. Stations 71T and 7ACP are known from Los Angeles to Minnesota. And to-night, September 23rd, we open our own broadcasting station, Radio KFJR, at 8 P. M. This station, designed by Mr. Abner R. Willson, radio engineer of Butte, Mont., is entirely home-made, the work being done by the writer and his son.

The same antenna we use for receiving serves for the amateur transmitters as well as KFJR. The poles are not a couple of hundred feet high, but only fifty. And every now and then, for a radio stunt, the antenna is disconnected, and music or speech picked up with a bell cord tacked to the picture rail in the den, from stations as far away as WJAZ, in Chicago, loud enough to be heard through the loud speaker a hundred feet from the house.

Winter is now a season of anticipation and joy. Summer—the poetic Western summer of gentle breezes and sunshine—is tolerated as a necessary evil, preceding the season of snow and blizzard, made perfect by the "voices of the air."

"The Choice of a Receiving Tube," by B. S. Havens, omitted from this issue, will appear next month

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The Transatlantic Broadcasting Tests and What They Prove

(*Continued from page 191*)

interference now experienced on the broadcasting wavelengths. Those now used by ship and shore stations have been adopted by international convention and it will be impossible to change them before the next international conference. However, an effort is being made to reduce this interference to an absolute minimum by regulations of the companies in charge of ship and shore stations.

Receiving sets which in themselves act as transmitters when improperly operated, must be abandoned. Scattered owners of receivers have appreciated this fact for some time, but these tests have brought it home to many more listeners-in. They found it almost impossible to evade the disturbance these sets created.

Our own conception of the great influence that the international exchange of ideas through radio broadcasting will have, is nowhere better expressed than in these words from

Mr. Young's speech from WGY: "Men who talk with each other daily, with the object of better understanding, do not fight. Let these international conversations go on. Let the work of the engineers go on." Or, as Neal O'Hara wrote of these tests in the New York *Evening World:* "It looks like radio is doing its best to cloud up the next war."

MISS CATHERINE MOORE

The first girl radio fan to report picking up the now famous "Hello America" in RADIO BROADCAST'S transatlantic tests

ADDRESS BY MAJOR-GENERAL HARBORD TO LISTENERS-IN OF GREAT BRITAIN FROM STATION WGY, NOVEMBER, 28TH, 1923

The privilege I now enjoy of addressing people of the old and the new world without having even to raise my voice above conversational tone, is so unique, so impressive, that I am awe-struck at its potentialities. This is indeed an age of miracles. It is only three years ago that experiments in radio broadcasting commanded the awakening interest of our entire country. People marveled at the wonderful agency which made it possible for them to capture from the very atmosphere about them the voice and personality of some artist or speaker perhaps a hundred miles away.

Since then we have passed through a period of development, so rapid and vast as to place it beyond ordinary powers of description. To-day, it can truthfully be said that there is not a community in the United States to which one or more stations of our comprehensive broadcasting systems do not carry their messages of utility and varying entertainment. Leaders of political thought, culture, science and the arts are enabled to address millions of their countrymen in all walks of life, in city and in country with an ease rivalling the intimacy of the telephone.

From those across the sea, our kinsmen by blood and tongue, have come your own statesmen in recent months, and served by this same genie, radio, their voices have reached millions of our people.

And now, scarcely before we have been able to grasp and assimilate the tremendous import of it all, we are invited to speak to our British cousins across the weary stretches of three thousand miles of the intervening Atlantic.

It is a matter of tremendous pride to you and to us that this new accomplishment is the logical outcome of the intensive research and development that has been untiringly carried on by scientists in both our countries since the inception of radio broadcasting.

As my voice reaches the people of England to-night, my memory pictures the great service and unfailing hospitality that our American soldiers received at your hands, while on their way to France. Your splendid coöperation in those trying months will never be forgotten. Nor can we forget how considerate and tender was your care for our wounded, and how our men were welcomed to your homes at a time when perhaps anything more than the barest frugality could be ill-afforded by your generous people in the throes of a great war.

Our nations are closely cemented by unity of democratic purpose, by the same high ideals, and by a common language. Let us hope that this first exchange of thought by voice across the broad Atlantic will serve to strengthen our existing friendship in permanent bonds of understanding.

The program of this National Radio Week have constituted the first attempt to reach you through organized broadcasting, and to receive your acknowledgment from your own broadcasting stations. Surely radio is the harbinger of a closer tie, more thorough understanding, among the nations of the earth.

I shall be very glad to hear from those of you in Great Britain who may have heard my voice this evening. This is the President of the Radio Corporation of America, speaking from station WGY on the occasion of the first organized broadcasting tests between America and Great Britain—tests instituted by one of our publications known as RADIO BROADCAST *and staged during our National Radio Week. Thank you. Good-night!*