

Conducted by JACK BINNS

Talking From A Speeding Railroad Train

First Test With Radiophone To and From Lackawanna Student Special Proves Completely Successful

Students Conduct Test

Will Soon Be Possible to Communicate From Trains Throughout U. S. by Phone

The last stage of business and social isolation in life is now being rapidly removed by the remarkable strides that are being made daily in the development of radio telephony.

Last week the Lackawanna Railroad conducted a series of tests of great importance, which culminated in the trials on board the Cornell special carrying students from Ithaca to New York City on their spring recess.

The apparatus on these trains was operated by two young experimenters from Princeton University, Messrs David W. Richardson and G. Donald Murray.

The outstanding fact gained from the tests is that with specially developed transmitting equipment on a train it will be quite possible to communicate from any part of the United States with the train while it is in motion.

The specific lessons taught by the experiments are: First, that tunnels and cuts will not affect this communication so seriously as was at first thought; second, lakes and other large bodies of water near the railroad tracks have the peculiar property of increasing the signal strength; third, going directly above the tracks on the railroad completely wipe out the signals when the mountain stands between the fixed radio station and the train.

The tests in other directions confirm many theories, particularly that of the directional effect of the flat-top aerial. This was very pronounced when the train was rounding a curve, as expressed in the words of Mr. Richardson: "The position of the antenna in regard to the station, from which we were receiving was another important factor, for often going around a curve, on a perfectly level plain, would make one set of stations completely fade out and bring in another."

The aerial on the train consisted of three cages, each composed of six wires threaded through four and a half inch diameter wooden circles. One of the cage aerials ran along the center of the car, and the other two were erected one on either side of the car.

One of the remarkable results of the experiments is the fact that even with this low aerial, signals were received from practically all parts of the United States. This was particularly true with regard to the low-powered amateur transmitting stations.

An amusing incident occurred while the train was moving between Mountain View, N. J., and Hoboken. At the time the two young experimenters were entertaining the passengers aboard the train with the musical entertainment from WJZ, the broadcast station at Newark, N. J., which was being reproduced upon a loud speaker clear above the noise and rattle of the train.

One of the listeners was a radio fan of Lyndhurst, N. J., who quickly apprised the possibilities of the situation. "Can you talk from here?" he inquired somewhat excitedly. When he had been answered in the affirmative, he continued: "Well, I've got a set home and I know my wife is listening in right now. I'd like to talk to her."

The obliging experimenters turned their transmitting apparatus to 360 meters, and as soon as the WJZ program was completed, the station was passed to send words of greeting to his wife from the train. This was also done in case of the students who had sets in their homes, only in their case the conversation was prearranged and pre-arranged.

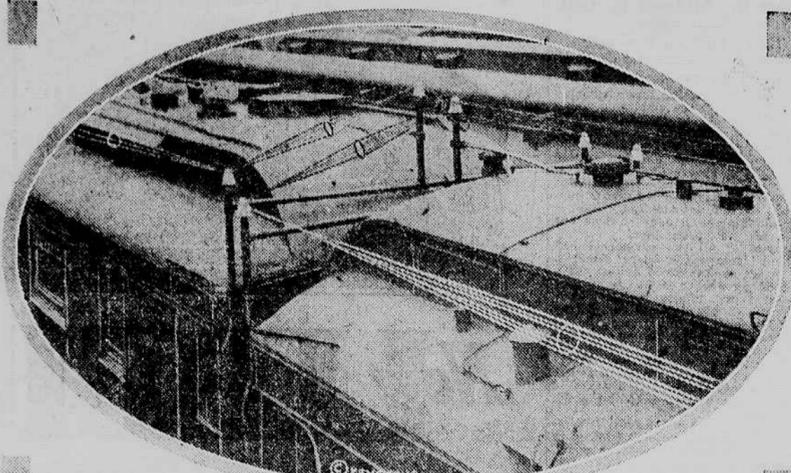
Regarding reception on the train, while it was at rest in a station and while it was in motion, Mr. Richardson in his log recorded the following: "Underneath the iron superstructure of the terminal a few local amateurs were picked up, and one or two radiophone transmitting stations, readable on the loud speaker. After leaving the terminal there was a great increase in signals, and as the Bergen tunnel in Jersey City was approached many local amateurs were picked up inside the Bergen tunnel, which is 283 feet long and 90 feet underground, one or two continuous wave stations and several ships were heard distinctly. Upon emerging from the tunnel, signal strength increased with a bang."

"One or two long telegraph calls on continuous wave were given, followed by voice transmissions. When about ten miles from Scranton, following one of these long calls with the voice, 8-ARI on 197 meters was clearly heard calling by voice, 'Hello, DL, Hello, DL; Hello, Lackawanna Limited. I am receiving your voice very clearly. Please come in and give your location.'"

"The Lackawanna Limited was then coming down the mountains at about sixty-five miles an hour, through ravines and across through tunnels. There were hills on all sides, and one would suppose it to be a most inauspicious radio location."

"Communication was then established with 8-ARI and conversation was kept up until the Limited had arrived in Scranton. The signal strength of 8-ARI in Scranton was such that many people who gathered in the special car could hear everything said."

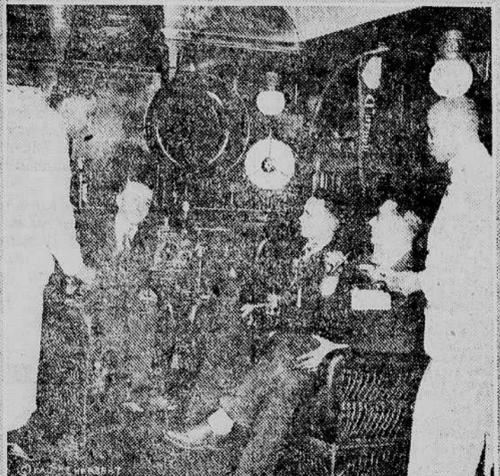
Listening to Jazz on a Train at Sixty Miles an Hour



Summing up, Mr. Richardson concluded his log as follows: "In the way of an experiment, perhaps the most interesting data gathered was that of the effect of location on signals. Nearly all previous theories seemed to be confirmed, except that of immediate proximity of rock, steel bridges and bodies of earth. Very little difference could be noted whether the railroad ran through a steep cut, thirty or forty feet deep, or was on the level."

"Whenever the train went through a thickly wooded piece of land where the trees were high all long-distance signals faded out entirely. The nearness of a body of water or a stream, even though small, seemed to greatly increase signal strength. The position of the antenna in regard to the station from which we were receiving was another important factor, for often going directly above the tracks on the level plain would make one set of stations completely fade out and bring in another."

"Small contours in the earth's surface, when they were not wooded, seemed to have little effect, but the location of a mountain immediately between the train and stations in a certain locality would cut out signals entirely. This was evident very strongly when we lost 8-BW while rounding a mountain, but we could hear it again when higher up on a plain. The best signal strength of all was when passing on a high embankment across a bay, perfectly level, and even better than the proximity of a lake. Of course, all these observations are those from only two trips, but yet they seemed to hold true in nearly every case."



The upper picture shows the aerials equipped on the Cornell Special for receiving music and speech, and also for transmitting concerts and speeches from the train while in motion. Lower picture shows the receiving apparatus with the three student operators. Left to right—R. D. W. Richardson, G. D. Murray and E. G. Sisson

Radiophone "Valve" Needed To Prevent Interference

John Grinan, First Amateur to Communicate Across Continent and Atlantic, Points Out Per-foot Radio of the Future

One of the most romantic figures in the army of radio amateurs is John F. Grinan, known intimately to all amateurs as "Johnny". From the days when the coherer was the sole detector in radio work, and a ten-inch spark coil the only transmitter, John Grinan has been hard at work in the field of wireless communication, and so qualified as one of the oldest members of the fraternity of radio amateurs. He is a director of the exclusive Radio Club of America—the "Four Hundred" of radio circles—and has been chosen as the subject of this week's interview.

Mr. Grinan has the enviable distinction of being the first amateur to send a message across the continent with amateur equipment, and last December added to his laurels by sending the first amateur message across the Atlantic Ocean.

He originally achieved outstanding recognition from his fellow amateurs by instituting the first relay across the continent from New York to Los Angeles and return in March, 1917. On that occasion a message was relayed from one amateur station to another, and the reply received within one hour and forty-five minutes from the time Grinan started the message on its long passage across the continent and back.

The First Trans-Continental Message He followed this up with excellent work until a few weeks later he actually succeeded in sending a message from New York to Los Angeles direct without relay, using only 450 watts power in his synchronous spark transmitter at Station 2-PM. This is less than one-half of an electric horsepower.

Then last year came the famous first trans-Atlantic communication with the associates kept watch at the station, by Paul F. Godley. Grinan with his associates—Major Edwin H. Armstrong, inventor of the regenerative circuit; E. V. Amy, the short wave antenna expert; George E. Burghard, president of the Radio Club of America; Minton Cronkite and Walker, who erected a special amateur station at Greenwich, Conn., which has become famous under its call letters of I-BCG.

Night after night during these tests the associates kept watch at the station, and sent out their messages in the hope Godley would pick them up. Fate strangely enough chose Grinan

and that is one of the causes of some of the interference, especially where there are two or three aerials on the same roof, as in the case of some apartment houses.

"Now, what is needed to overcome this is some sort of radio valve—if you like to call it that—which will permit the received waves to pass down the aerial and be recorded in the telephone receivers, but which will at the same time prevent the oscillations from the receiving set itself being radiated from the aerial."

"There is a great chance here for the amateur or novice experimenter to come forward and solve what may in the near future prove to be a very grave problem. There isn't the slightest doubt that it can be done, and a piece of apparatus for that purpose will undoubtedly soon be evolved."

Rhodes Scholar Regulations Broadest by Radio

SWARTHMORE, Pa., President Frank Aydelotte, of Swarthmore College, and American Secretary of the Rhodes scholarship trustees, has adopted radio as the method of broadcasting the annual regulations governing the thirty-two scholarships apportioned to the United States.

Applications for the scholarships must be in not later than October 21, and final selections will be made December 2. Mr. Aydelotte told his invisible audience, many of whom, he said, he imagined were high school and college boys.

The regulations provided that the stipend of a scholarship, normally \$1,500, had been increased \$250 as a bonus to meet the increase in prices. Warning was given, however, that even this sum is not sufficient to meet the increase and candidates will need to supplement their scholarship on the average with \$250.

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Next Congress To Be Elected By Radiophone

First Gun in Political Warfare Has Already Been Fired From Washington in Indiana Primaries

Miss Robertson in Fray

Radio Will Exert Deciding Influence, but Only Good Speeches Will Get Votes

"Fellow citizens, I point with pride to the remarkable achievements of the party to which I have the honor to belong and view with alarm the terrible calamity which will befall the country if the Indiana measure, fathered by Senator Sorghum should be enacted into law by the Congress. It is your duty, fellow citizens, to defeat this abominable legislation, and if you elect me I promise faithfully to oppose it at all costs."

Out over the nightly ether such messages as these will be floating in impassioned tones with the best Congressional oratorical flourishes within the next few weeks, as Congressmen and Senators awake to the possibilities of radio as a means of electioneering. In fact, there isn't the slightest doubt but that the November elections will be decided in the air—just as it was predicted the last war would be.

In this case, however, it will be a different kind of aerial battle, verbal bombs taking the place of those filled with T. N. T. In the Congressional arena the Congressional aerial warfare will be similar to the late unpleasantness in Europe—there will be lots of gas released.

The battle is already on with a vengeance, and it looks as though it will be a fight to the finish. The first gun was fired in Washington by Senator Harry S. New, who, unable to be present in his home state of Indiana, addressed the voters in a private telephone from the government broadcasting station in Washington, in the primary campaign against former Senator Albert J. Beveridge.

Bi-Partisan Fight is On

This so incensed the Democrats that they went on a rampage immediately, despite the fact that it was a private Republican fight in Indiana. Senator King, of Utah, immediately raised ructions because the Navy Department had permitted the Senator from Indiana to use the government electromagnetic waves for the purpose of casting his voice across the country. He threatened to open the whole matter on the floor of Congress, and it was only through the intervention of his constituents in Utah failed to mollify the ire of Senator King—but, of course, Senator King is not seeking re-election this year.

The adventure of Senator New into the realm of etherical conversation has whetted the appetites of all the other Senators and Congressmen, because they see a brilliant opportunity which is not presented by "The Congressional Record"—an opportunity of letting their constituents listen to the golden oratory with which they move the halls of Congress and rock the national craft upon the political seas.

Senator New's venture was quickly followed by Miss Alice Robertson, the lady from Oklahoma, who desired to speak with her constituents in Muskogee. Something, however, went wrong at the last moment, and Miss Robertson was compelled to fall back upon the transcontinental telephone line, and her speech by radio has been deferred for a time, while the citizens of Oklahoma are waiting patiently for the novelty of their country.

The general rank and file of Congress is all up in the air over the opportunity afforded by radio for electioneering purposes. Their anticipation has been aroused by the statement made by Secretary of Commerce Herbert Hoover that upward of a million American homes are now equipped with radio receiving apparatus. Those Congressmen of a meager mind, who have their mind have been extremely busy of late figuring things out on a slip of paper. Most of them are arguing along the

assumed premise that an average of at least four persons are listening in on each of these speeches.

In other words, they have come to the conclusion that at the lowest estimate four million people will be sitting with telephones glued to their ears when the Congressman starts up his oratorical fireworks. This is too wonderful a chance to pass up, especially when it is taken into consideration that their speeches cannot be interrupted by catcalls, hisses or embarrassing questions from hecklers.

There is, however, one thing the expectant Congressmen overlook, and that is the fact that the radio audience can certainly shut off their apparatus any time they do not like the stuff that is being broadcasted. For this reason it is imperative to the candidates from both parties not to perpetrate any trash on the ether which loses their votes. On the other hand, a well thought out and well delivered speech will make votes.

Under these circumstances there isn't the slightest doubt that the election of November will be decided in the air.

Movies Fight Radio Entertainment With Its Own Weapon

Large Picture Concern Will Erect Station Studio to Broadcast Merits of Films

War has been declared upon the radio-telephone broadcasting entertainments by one section of the moving picture industry, and the battles will be fought out in the ether.

The first indication that radio entertainment was in any way affecting the "movies" came with the announcement of a contract for a broadcasting station made with the Western Electric Company by the Pyramid Pictures Inc. The contract calls for the installation to be placed in the Astoria, L. I. studio of the latter company.

Although little is known at present regarding the plans of the moving picture concern, it is known that they are taking this means to fight the influence of the radio-telephone entertainment, in order to bring out and emphasize the attractions of the "movies."

It is expected that the station will be built and erected within one hundred days, and at the end of that time the virtues of particular films on current display will be sent out broadcast through the ether by some of the well known and overworked picture stars.

So far as can be ascertained it is the purpose of the picture industry to provide a musical entertainment as well as notices of current films, but the musical numbers will be so arranged that they will not tend to keep a family at home during the period the film attraction will be appearing in the local "movie" houses.

The broadcasting station will be also used for another experimental purpose, it was said. This is for the purpose of providing music synchronized to fit in with the feature film as its portrayal is developed upon the screen. There are great possibilities along this line, it is realized, but it will take a great deal of experimenting and considerable time before it can be placed upon a stable and schedule basis.

This, of course, will be more of an afterthought. In the next few weeks do not be surprised if, when you pick up your receiver, you hear something along the following lines: "Go immediately to the twenty-fifth-century at the corner of Umph and Catchesen streets and see Percival Archibald in 'Loves Sacrifice,' the master production of the Special Motion Features Company."

Retail Association to Meet The National League Dry Goods Association has sent out a call to members in the Eastern states to attend a meeting in the Hotel Pennsylvania Tuesday, April 18, for the purpose of discussing the problem of placing the merchandising of radio sets upon a sounder basis. It is believed that the best interests of the public can be met by doing this, and taking steps to eliminate some of the "fly-by-night" apparatus that is now being placed on the market.

Congress to Act on Naval Radio News Service

WASHINGTON—Action by the Senate and House is expected probably during the current week, it was said today, on the joint resolution extending until June 30, 1925, the time in which naval radio facilities might be used for handling press and commercial business.

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