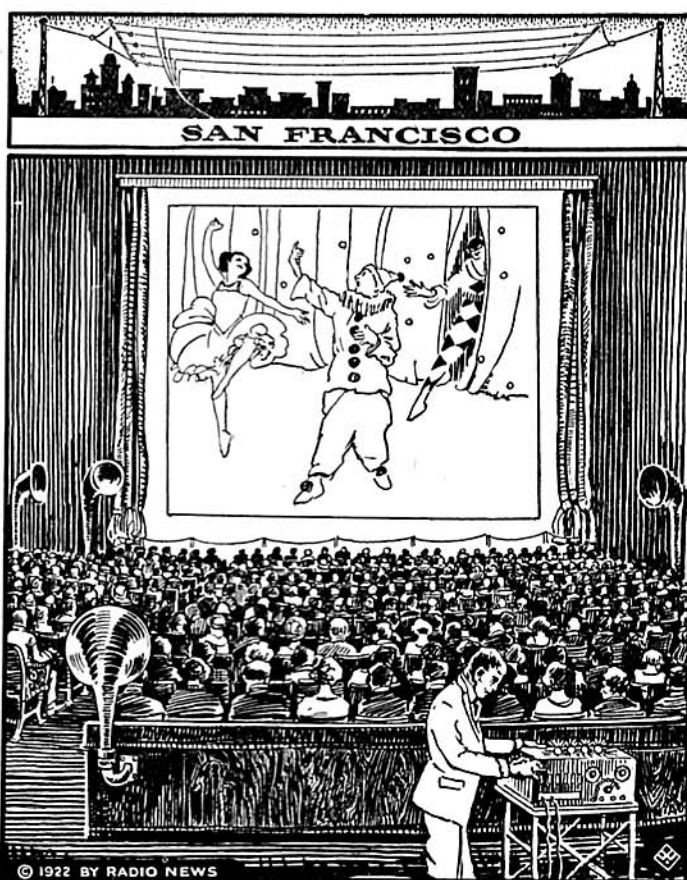
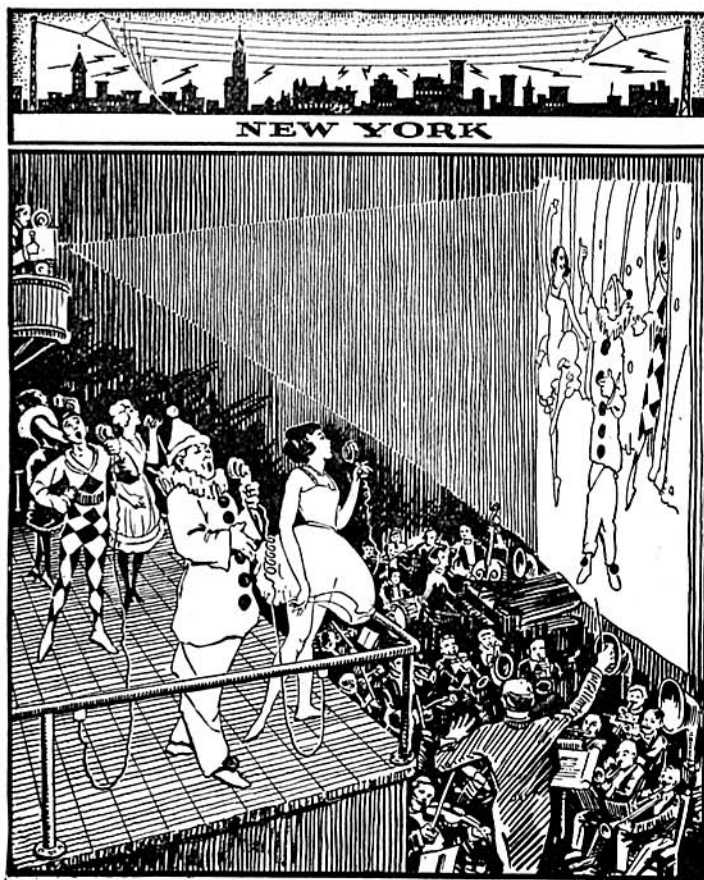


# Radio Talking Moving Pictures



The Opera by Radio, in Synchronism With the Movies. In San Francisco and All Over the United States Audiences Are Listening to the Voices of the Opera Singers Broadcasted by Radio While Moving Pictures Show the Movements of the Players.

We received a short time ago an interesting manuscript from the Rothacker Film Company whereby mention was made that Harry J. Powers, Jr., was the inventor of a certain radio talking moving picture. That is very interesting to us for the main reason that the idea is an invention of Mr. H. Gernsback and was described in RADIO NEWS in September, 1919.

Inasmuch as there is so much interest in these matters, we are reproducing Mr. Gernsback's article at the end of this story for the benefit of all concerned.

—Editor.

THE "movies" and the "speakies" have at last been wedded. The radiophone was the minister.

Through experiments conducted in Chicago it has been proven that talking motion pictures are a practical possibility—not the "canned" talking pictures on the phonograph principle that have been tried, but talking pictures by means of the human voice transmitted by radiophone from a broadcasting station to as many theatres as are on the movie-speakie circuit.

A device has been perfected whereby any number of motion picture theatre projection machines can be operated in perfect synchronization with a master projection machine at the radiophone broadcasting station. This master machine itself projects a picture which furnishes cues to the actors who supply the sounds heard by the theatre audiences.

This is the principle of the radio talking movie; A motion picture is produced in the studio as usual, the scenario writer having supplied speaking lines and sound effects as

though the production were to be given behind the footlights. A number of theatres are equipped with radiophone receiving instruments and projection machine synchronizing apparatus. The movie company, possibly composed of the same persons who made the original film in the studio, is assembled at the radiophone broadcasting station.

Out at the theatres the overture has overtured and the audiences settle back for the evening's feature movie-speakie. Buz-z-z goes the signal at the broadcasting station and in all the theatre projection booths. The master projection machine begins throwing the photoplay upon the screen at the broadcasting station and simultaneously, to a fraction of a second, the silversheets at the various theatres are illuminated with the shadow-drama.

At the broadcasting station the movie actors re-enacting the drama, speaking out their lines, word for word, just as though the many different audiences were seated in front of them instead of in many different theatres many miles apart. The actors watch the film being screened by the master projector very closely lest they supply the speakies too swiftly or too slowly for the movies.

Thus when the heroine screams for help the audience will hear her cries. They will hear the hero's shout of encouragement as he speeds to the rescue, and when he fires the shot that puts an end to the villain's villainy, the movie-speakie fans will hear the deafening roar.

The radio talking picture is the invention of Harry J. Powers, Jr., connected with the Erlanger theatrical interests with headquarters at the Colonial Theatre, Chicago.

The wedding of the movies and the speakies took place at the Chicago practical picture studio of the Rothacker Film Co.; Frank Bacon, famous as the star of "Lightnin'," was the best man. Bacon is a radiophone enthusiast and he found time between matinee and evening performance to enact the first scene of the historical experiment that proved the radio talking picture possible.

The Rothacker studio lights flashed on. Bacon took his position behind a table set in front of a black velvet curtain. Waterson R. Rothacker, president of the film company, shouted "Camera!" the cameraman began to crank and the world's first radio talking picture was in the making.

"Ladies and gentlemen," began Bacon, accompanying his words with those inimitable gestures of his, "it gives me great pleasure to be the first to try to demonstrate something which will prove the most wonderful, the greatest amusement the world has ever known—the human voice synchronized with motion pictures through the radio telephone. We are living in a very rapid age in which nothing seems impossible."

To one side of the studio set a stenographer was taking down Bacon's words in shorthand so that he could later give a precise repetition of them over the radiophone broadcasting apparatus.

"Suppose that in a motion picture," continued Bacon, "the heroine is in great temper; she sees a water glass and, seizing it, she smashes it down upon the table thusly." Bacon smashed the glass.

And on through 200 feet of film Bacon proceeded, ringing a dinner bell, blowing a whistle and finally firing a revolver at an

imaginary abductor of the banker's daughter.

"And this," he concluded, lifting a radio receiver to the table, "is the receiving end of the wonderful radiophone which makes it possible for you to hear my voice—or any actor's voice. Upon this occasion I predict that the time is at hand when the radiophone will supply natural sounds in connection with motion pictures in theatres all over the world."

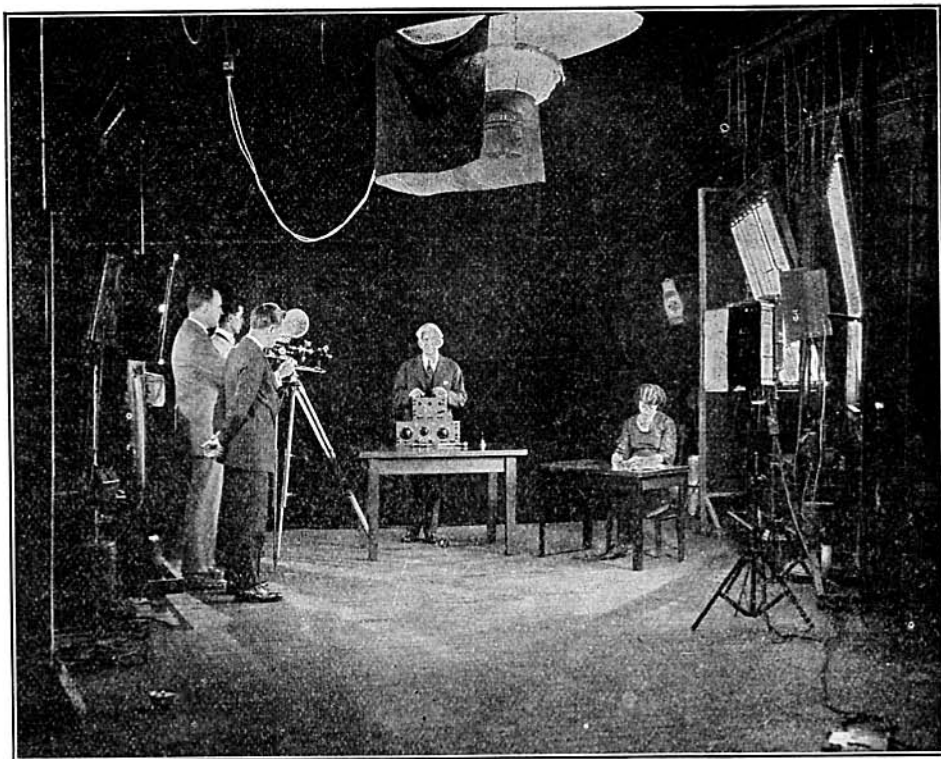
Scene II of the experiment followed next day after the negative had been developed and two prints made. One print was placed in a projection machine at the Rothacker laboratory and the other in a projector at the broadcasting station. The signal to start was received from the broadcasting station by the receiving instrument beside the projector at the Rothacker plant. Both projectors started simultaneously.

For a number of feet of film the two screens remained blank save for numbers flashing up, which were to enable the two projector operators to get their widely separated machines into synchronization. How this was possible is perhaps the crux of the radio talking picture invention.

The two projectors were running "neck and neck" when upon the two screens Bacon, the photographic image, made his bow. At the broadcasting station Bacon, the actor, stood ready to repeat his words of the day before to fit the position of Bacon, the image, on the screen before him. At the receiving end the lips of Bacon, the image, began moving and, right upon the dot, through the receiving instrument came the words of Bacon, the actor. When the water glass was broken in the picture the sound of breaking glass was heard, and when the screen dinner bell rang the real bell rang.

By the time the experiment progressed to the revolver shot one machine had gained in speed. This was because the human element entered into it; one operator ran his machine too fast.

Harry J. Powers, Jr., the inventor of the synchronizing device which the speedy operator failed to follow, saw that if the radio talking pictures were to be a success the human element would have to be absolutely eliminated—save for the movie actors re-enacting the drama at the broadcasting station. These, by rehearsals and careful observance of the cues screened by the master projector, can do their part, he feels sure.



Frank Bacon in the Studio Where Experiments Were Conducted on the Radio Speaking Movie. Mr. Bacon's Words From the Radiophone and His Actions on the Screen Synchronized.

The problem of eliminating the human element at the theatre projection machines was mechanical. The Rothacker technical staff and engineers employed by Powers have solved it. However, the projection machine operator in the theatre booth will never be eliminated except with respect to the regulation of the projection machine's speed; it will always be necessary to have a skilled projectionist beside every machine.

Harry J. Powers, Jr., has kept the radio talking picture experiments rather a secret pending patent matters. However, he is now ready to give a public demonstration in Chicago. He plans to equip a number of Chicago theatres with radiophone receiving instruments and Frank Bacon will broadcast the speakies from a broadcasting station being installed in the Wrigley building.

Powers does not claim that all problems

have been solved—merely that the practicability of the radio talking movie has been demonstrated. For example, there is the problem of applause. With the voice of the actors coming through the radio receiver the audience will be more liberal with applause. During the applause will the movie-speakie be temporarily shut off, or what? And different audiences will not applaud the same periods of time.

The possibilities of the radio movie-speakie stimulate the imagination. It has been said that a large part of an actor such as Otis Skinner—namely the voice—is lost upon the picture screen. Will the time come when an actor like Skinner can stand at the radiophone broadcasting station and give a true performance before hundreds of audiences in all parts of the country? Is the radiophone to add the final touch of realism to the shadow stage?

(Continued on page 1202)

## Advertising Pays By "THE WANDERER"

TURN back to your January issue, and find the article, "Who Can Use This Man," by "The Wanderer." Did you read it with perhaps a thought that something must be radically wrong with the author, if he couldn't secure a satisfactory position with the ability and experience he claimed for himself? As the author, it had not occurred to me in that way, until when talking with a brother operator on a recent West Indies cruise, he told me what impression the article had made on him, at the time of reading. It was just this; that a man of the experience and ability claimed, must be lacking in some respect; personality perhaps, not to be able to find a niche for himself. Had you thought of it in that way? Whether you had or not you'll doubtless be interested in the results obtained, and then may judge for yourself where the original trouble lay.

Before the January issue had reached the writer, replies began to reach him from various parts of the country. After a reasonable length of time, in which all interested parties had communicated with the

writer, it was found to be a singular fact that every reply but one, came from east of the Mississippi. As there were 21 answers, this is indicative of one very large factor, which explained to me why radio opportunities did not come to hand as readily as I had been led to believe by various propaganda. It is distinctly apparent that the present day radio opportunity is in the east. As the writer was on the west coast, naturally opportunities were few. This is readily explained after a little logical thinking. The greatest field for radio sales lies in the circles surrounding the large broadcasting stations. The most prominent broadcasting stations are those of the Westinghouse company, but of which the west coast has none. True, there are numerous broadcasting stations on the west coast, but for the majority they are of low power and short schedules, none of them having the facilities for entertainment that the Westinghouse stations have. Therefore, they do not command nearly the interest of the public that the eastern stations with their excellent programs can claim. So

much for that. Now is it not logical to assume that if the greatest sale for experimental equipment is in the east, and the largest part of the raw materials for manufacturing purposes is from eastern sources, that it would be poor business to pay transportation on raw material to the west coast, make the marketable product there and ship it back to eastern markets for sale purposes? The common sense answer is, manufacture in the east, where the raw materials are, and ship only enough finished product west to meet demand. Double transportation costs are then avoided. The proof of this can be found in the fact that all manufacturers of radio equipment, with one or two exceptions, are found east of the Mississippi.

To return to direct results from my original challenge. Both telegraphic and postal replies were received; many good propositions among them. Each was answered promptly, but nothing "jumped at." I being resolved not to rush blindly into anything. Negotiations were opened with

(Continued on page 1201)



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ing would land me in New York, right in the heart of the radio opportunities. From what I could gather by inquiry, it would seem that conditions for marine operators are very much better on the Atlantic coast than the Pacific. At the time the writer left Seattle, there were three operators available for every opening, with no prospect of any immediate relief. Shipping seems to be on the up-grade in the east, which may lead to something of the same in the west in the near future.

At this writing I am in New York, having arrived but a few days ago from the West Indies. Already inquiry has been made among several who originally replied to my challenge, with the result that the writer is in rather a quandary as to just what to accept. Many good, bonafide offers are at hand, making it hard to choose the most promising. In addition to those originally interested in the "Wanderer," several other parties, whom the writer has approached, have made offers, with no idea that the writer was the author of the article in the January issue.

To sum things up, my conclusions are now, that there are numerous opportunities in the radio field for the trained man, but that at the present time, all these opportunities are in the eastern states. The tide of popularity which radio is creating is slowly sweeping westward, but the immediate, present-day opportunities are in the east.

A word or two in reference to salaries involved in the majority of offers may be of interest to those who are looking for opportunities in the radio field. It will be remembered that the writer offered to start at a wage as low as \$125 a month, until his value had been proven. Such experience, at so small a salary, appeared to attract a number of offers from smaller concerns, that were new in the game. This was to be expected, as a matter of course. However, the real offers, that came from firms of high standing, offered varying salaries, where such was specified, running from \$125 per month to start, up to \$250 monthly. All the substantial offers carried prospects of advancement as qualified, and correspondingly increasing salary. From this it may be seen that the salary to be expected from positions such as we are concerned with, are in proportion to those paid for capable, experienced men in most lines of endeavor.

As for the classes of work involved, this was also of a varying nature. From a \$125 a month opening as clerk in a department store radio department, various branches were covered, including radio draftsman, assembler, designer, supervisor of operators and director of instruction in a large radio school. This naturally allowed a pick of classes of work involved, and of salary offered. However, the two conflicted in some instances. The salary was low and the class of work attractive. The other extreme was high salary but unattractive work.

From the above, it will be seen that radio seems to hold first place for choice of work and salary, among present day professions.

In conclusion, I wish to extend my sincere thanks to all who saw fit to interest themselves in "The Wanderer," and particularly to the Editor of Radio News, for his valuable co-operation. I thank you.

## Radio Talking Moving Pictures

(Continued from page 1077)

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By H. Gernsback

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grand opera music had been transmitted by wireless telephone for over one hundred miles. Sensitive microphones placed on the stage of the opera house caught the sound waves; the impulses then being stepped up in the usual manner by means of a transformer were then led into an amplifying vacuum tube. Here the current was impressed upon the radio telephone transmitter in successive stages and then sent out over the aerial on top of the opera house. Wireless amateurs all about the surrounding country were thus able for the first time to hear grand opera. While this was only an experiment, grand opera by wireless will soon be an accomplished fact.

During the next few years it will be a common enough experience for an amateur to pick up his receivers between eight and eleven o'clock in the evening and listen not only to the voice of such stars as Scotti, Tetrassini, McCormack and others, but also to the orchestra music as well, which is picked up by the sensitive transmitter along with the voice of the stars. The surprising thing is that it is not being done now.

The reason probably is due to the fact that as yet no means has been found to reimburse the opera companies for allowing everyone to listen in. While of course listening to the music is not as satisfying as witnessing the performance in person, still many music enthusiasts would rather stay home listening to the music alone than to witness the performance itself. To your true, dyed-in-the-wool opera fiend the performance is of secondary importance, the music always coming first.

But we must give a thought to the management, which cannot subsist on an empty opera house if everyone could listen in to the actual rendering of the opera without paying for the privilege. Needless to say that the producers would soon find themselves bankrupt. For this reason we cannot expect that grand opera by wireless will be an accomplished fact until some means has been found to reimburse the producers, and, as every wireless man knows, this is very difficult to do. Anyone with suitable radio apparatus can "listen in" to the music without much trouble. No matter on what wavelength the music would be rendered, every wireless man would find a way to listen to it without serious inconvenience.

Probably the only logical way out would be for the management of a grand opera company to advertise in the newspapers, stating that no grand opera via radio would be given unless a certain amount of revenue were guaranteed by radio subscribers before "radio performances" would be given. This would mean that probably ten out of one hundred radio stations, amateurs and otherwise would pay monthly or yearly dues to sustain the management, which then would not have to care how many were listening in.

This is the only practical solution. As for technical difficulties, there are of course none. All that is necessary for the producing company is to install a high-class wireless telephone outfit which can be bought on the market right now and which is immediately available. The rest is up to the wireless fraternity, which has nothing else to do but listen in.

At the receiving end, the future up-to-date radio opera enthusiast will, of course, have a first-class receiving outfit, using vacuum tube amplifiers, and a loud talker. Then it will be a simple matter to listen to Scotti himself, though he be a thousand miles distant. His voice will come out loud and distinct and the amateur's family will be enabled to "listen in" to their hearts' content.

There is still another novel scheme recently originated by the writer.



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Let us say, by way of example, that the opera "Aida" is filmed in its entirety. This may mean a four or five film feature. The opera will be filmed just like any other photo-play.

Our large illustration shows what happens next. The stars, singers, players, the chorus, orchestra, conductor, etc., are then assembled in a moving picture studio and in front of them is the usual screen. The opera "Aida," which had been filmed before, is now repeated on the screen while the entire cast follows the screen picture closely. Each performer, every star, every member of the chorus has his or her own microphone in which he or she sings the regular score, watching closely the film-play as the action is unrolled on the screen. The moving picture opera through the film operator keeps time with the singers, and the singers themselves must keep exact time with the performance as it is unrolled on the screen before their eyes. Inasmuch as the identical cast has been filmed, it will not be difficult for them to keep time with their own performance, as may readily be imagined. In other words, when Scotti sees his own figure appearing on the screen he will know exactly how and when to sing into the microphone in front of him.

All of the microphones go to the wireless telephone station located in the radio room above, and there are, of course, sensitive microphones in the studio which pick up the sounds from the orchestra as well. All sounds are then stepped up through the usual amplifiers and are then fed into the high power vacuum pliatrons, which finally amplifies the original sound several million times. These impulses are then sent out over the usual aerial located on top of the house and are shot out all over the country instantaneously.

Five hundred to 1,000 miles away—and for that matter all over the country—every moving picture house will have been supplied with the identical film at the stated performance, it having been announced days ahead that the grand opera "Aida" will be given at such and such an hour.

Of course, where the distances are large, the hour of rendering the opera will vary. Thus, for instance, if Scotti were singing in New York and a performance would start at eight o'clock in the evening, New York time, it would start in San Francisco at four o'clock in the evening, as a matinee, due to the difference of time. Inasmuch as such performances would probably only be held once a month, people would not mind to inconvenience themselves due to slight difference of time.

Every moving picture house will have its receiving apparatus with its usual amplifiers and anywhere from six to one dozen loud talkers scattered through the house. Exactly at the stated time the moving picture operator will begin grinding away—the opera has begun. Simultaneously the distant orchestra will begin playing, filling the house with music.

When the actual performance begins, it will be an easy matter for the operator to keep time with the incoming music. All he needs to do is to grind faster or slower, and inasmuch as Scotti with his performers in New York is watching the identical film, the distant operator will have no trouble in having the music keep time with his film. If he finds that he runs ahead for one second, he can readily slow up the

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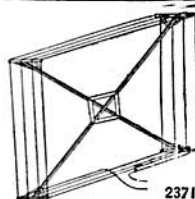
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next and vice versa. With a little practice it will be easy for the distant operator to time himself perfectly, thus giving the patrons of his house an ideal performance.

From a financial standpoint it would be good business for the opera company, as well as for the moving picture house, both of which would thus derive a new income running into the hundreds of thousands without hardly any expense whatsoever. The grand opera with an outlay of from one thousand to three thousand dollars could buy its high power radio telephone outfit, while every live picture house throughout the country would be able with an expenditure of less than five hundred dollars to buy its necessary radio telephone equipment and this cost would only be initial, because nothing except burnt-out vacuum tubes need be replaced and there is practically no cost of up-keep.

The writer confidently expects that this scheme will be in use throughout the country very shortly.

### Correspondence from readers

(Continued from page 1117)

I wish you would put this in your magazine and let us have some discussion on the subject.

RALPH R. GARRICK.

(Words well spoken! Unfortunately for our old timers, the day has come when they will have to take a back seat, at least for a while. 999 people out of 1,000, interested in radio to-day want broadcast stuff, so it is the duty of the Editor to give the public just that. We have predicted for years that the time would come when code work would be replaced largely by radio telephony. In other words, as far as the amateur is concerned, radio telegraphy is surely on the wane. It is the story of the telegraph and telephone, repeated. The telephone has not displaced the telegraph, but the percentage of people using the telephone is thousands of times greater. There is no use trying to stem the tide, and much as we would like to see amateur radio telegraphy increasing, we do not hope for much just now when everyone has the radio telephone craze.—Editor.)

### WESTINGHOUSE CO. EXPLAINS.

Editor RADIO NEWS:

I have just noted in the current issue of RADIO NEWS, on page 818, your letter of January 20 to the Honorable C. H. Houston, Assistant Secretary of Commerce. This letter contains a reference to the Westinghouse people of a character which may be taken in a number of ways, but the inference is that this company in some way has been a party to the restrictions recently placed by the Department of Commerce on the amateurs.

As a matter of fact, this company was the first to institute commercial broadcasting, and in so doing has really organized an entirely new branch of radio which has greatly stimulated interest and development in matters pertaining to it. The work of this company, as you can readily realize, has been undertaken at much expense and at considerable effort, for which there is hardly a compensating return, for you will appreciate that the business has been opened up to all manufacturers of radio supplies.

A short time ago a radio paper was almost a rarity on the newsstands, but they now occupy a position comparable with that of the *Saturday Evening Post*. You must admit that broadcasting is directly responsible for this.

From the very beginning the Westinghouse Company has recognized the position

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PATENT APPLIED FOR

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The Multiphone may be used in connection with any receiver. Simply place one of your receivers face down on Hipco Multiphone and draw the elastic bands over back of receiver to hold it firmly. The Multiphone will do the rest in a most pleasing manner. The extension tubes are all four feet (4ft.) long.



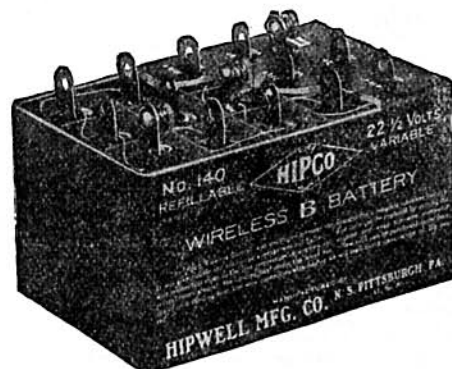
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