

**TO REGULATE RADIO
COMMUNICATION: HEARINGS APRIL 28,
1910 ON THE BILL (S.
7243) TO REGULATE RADIO
COMMUNICATION BEFORE THE
COMMITTEE ON COMMERCE**

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To regulate radio communication: hearings April 28, 1910 On the Bill (S. 7243) to regulate radio communication before the Committee on Commerce by Various

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TO REGULATE RADIO COMMUNICATION

HEARINGS

APRIL 28, 1910

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ON THE BILL (S. 7243) TO REGULATE
RADIO COMMUNICATION

U. S. Congress
" . . . COMMITTEE ON COMMERCE OF THE SENATE
OF THE UNITED STATES

SIXTY-FIRST CONGRESS, SECOND SESSION

CONSISTING OF

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TO REGULATE RADIO COMMUNICATION.

WEDNESDAY, April 28, 1910.

The committee met at 11 o'clock a. m.

Present: Senators Frye (chairman), Elkins, Penrose, Piles, William Alden Smith, Bourne, and Newlands.

The CHAIRMAN. This hearing will commence. I have sent for a stenographer, and everything that is said will be taken down for the use of the committee.

The committee will hear from Mr. Chamberlain for two or three minutes.

STATEMENT OF EUGENE T. CHAMBERLAIN, COMMISSIONER OF NAVIGATION, DEPARTMENT OF COMMERCE AND LABOR.

MR. CHAMBERLAIN. Mr. Chairman, I will only occupy not to exceed five minutes, for several reasons. The necessity for regulation of wireless telegraphy has already been recognized by every civilized nation of importance in the world. Every nation except the United States—not every nation possibly—but every nation of maritime consequence, is a party to the Berlin convention for the regulation of wireless telegraphy, which was enacted in 1906 and is now in force, and its provisions are very much more stringent than anything that is contemplated by the bill pending and before the committee.

There were certain difficulties in the way of the ratification of that treaty in this country. As a rule the telegraph systems abroad, especially throughout continental Europe, are owned by the Government. They are a part of the post-office system. Such, of course, is not the case in this country, and the ratification of that treaty would have raised several constitutional questions, several questions of administration which would have been very hard to meet. The necessity, however, to return to that point for regulation is conceded everywhere.

Second, the necessity for regulation in the United States has been dwelt on by all the departments of the Government that have anything to do whatever with the subject of wireless telegraphy. Those departments are primarily the Navy Department and the War Department, and incidentally the Department of Commerce and Labor, in behalf of which this committee reported not long ago a bill for acquiring wireless telegraphy on ships; also the Department of Agriculture and the Treasury Department, which through the Revenue-Cutter Service, has to use wireless messages in going to the rescue of ships in distress at sea.

I need hardly take your time to elaborate the argument on these points, because you will find them all incorporated in the reports of the House committee which has had this bill before it while this

committee was occupied with the river and harbor bill. The House committee gave extensive hearings, covering several weeks, and was enabled to report the bill. I would like, if it would be agreeable to the committee, and would add to the understanding of the matter, to have the House report, or at least the portion of it containing the recommendations of the Navy Department, the War Department, the Department of Commerce and Labor, and the Treasury Department, incorporated here in the hearings.

Senator BOURNE. I think, Mr. Chairman, it would be a good idea if the commissioner would just state the necessity of it in a few words. We can read the reports afterwards.

Mr. CHAMBERLAIN. The necessity for regulation—and regulation here goes to a limited extent—I will leave with the committee; also a statement quoting the figures of the Supreme Court as to the constitutionality of the legislation proposed.

The necessity for this legislation is caused by the constant and conceded interference on the part of the different wireless stations with one another. The reason that the Government is interested in that is primarily in the matter of the transmission of messages relating to safety of life at sea; secondarily, in relation to messages relating to the army and navy, which are, of course, of material consequence to the Government. The Treasury messages relate almost entirely to the dispatch of revenue cutters and the relief of ships. The army and navy dispatches are, of course, easily explained in the line of their own particular business, and are generally in cipher.

Senator BOURNE. Of what does this interference consist?

Mr. CHAMBERLAIN. This interference consists in breaking up messages, rendering messages unintelligible. They consist, in brief, like the interference with a speech, for example, by a racket; not always by interruption with a point, but frequently with interruptions for the purpose of breaking up the orderly dispatch of business.

As I say, the origin of this legislation dates away back to the Berlin Conference of 1903. The first conference was in 1903. The second one was in 1906. For the last two years the various branches of our Government have been endeavoring to shape up a bill that would work satisfactorily, and that means a limit; not such regulation by a very long way as is imposed abroad, but just sufficient regulation to accomplish the results desired.

With regard to the wireless-telegraph companies—I can not go into that because the committee evidently has not the time, but it has been discussed by them before the House. Two companies have gone before the House on bills, each one of them drawn, of course, in its own favor for the same purpose, and all concede the necessity for regulation.

Senator BOURNE. Does the necessity for this regulation come principally from companies with established stations or from amateurs?

Mr. CHAMBERLAIN. It comes from both.

Senator BOURNE. How does this bill cure that evil now existing?

Senator PILES. A station can not be operated unless it is licensed under such regulation as may be prescribed.

Senator BOURNE. The license is simply for identification. I do not see how that prevents interference.

Mr. CHAMBERLAIN. Senator, the regulation is proposed primarily by the assignment of wave lengths. Now, if wave lengths would suffice, the bill would stop right there, so far as most of us are concerned. But it is the consensus of opinion of the wireless people that that will not suffice. We have put in the bill the words "or otherwise," which will be criticised. Now, that is a very broad word, and it is used relatively.

Senator BOURNE. What part of the bill?

Mr. CHAMBERLAIN. If you will turn to page 4, section 4, line 12.

The CHAIRMAN. Mr. Commissioner, you are taking more time than I think ought to be given under the circumstances. There are quite a number of gentlemen who have come here in opposition to the bill.

Senator PILES. I think we understand what is wanted.

The CHAIRMAN. And I think that they ought to be heard now instead of those who live here.

Mr. CHAMBERLAIN. I was only answering questions.

The CHAIRMAN. You can be heard later on just as well as now and so can the gentlemen from the Army and Navy and Treasury departments be heard later on by the committee, but these gentlemen who have come here some distance I think should be heard now.

In opposition to the bill the committee will hear anyone as briefly as possible.

STATEMENT OF MR. JAMES H. HAYDEN.

Mr. HAYDEN. I represent the National Electric Signaling Company of Pittsburg, which desires to be heard in opposition to this bill.

Mr. Chairman and gentlemen, we concede that signals of distress from vessels at sea should be protected from interference for humanitarian reasons and that radio-communications of the Government should be protected, particularly those of the army and navy, for patriotic reasons. Our objection is not to the establishment of regulations for the protection of such messages, but to the manner in which this bill provides that the protection shall be accomplished. Your attention has been called to the report upon a bill identical with the one under consideration, made by Mr. Greene, from the Committee on Merchant Marine and Fisheries. He states correctly (p. 4):

The core of the bill is in the fourth section, which provides that—

"For the purpose of preventing or minimizing interference with messages or signals relating to vessels in distress or of naval or military stations by private or commercial stations, the President of the United States shall establish from time to time regulations by designation of wave lengths or otherwise to govern said private or commercial stations."

That section contemplates giving to distress calls from vessels at sea and to public messages an unrestricted priority in radio communication over all private messages and commercial business. That we believe is unnecessary and that the distress calls and public business can be protected better, in the manner proposed by a bill (H. R. 22558) introduced in the House of Representatives by Mr. Burke, of Pennsylvania. Instead of giving messages of those two classes unrestricted priority, the Burke bill contemplates giving some executive officer of the Government, perhaps the President or the Secretary of Commerce and Labor, authority to reserve certain ranges of wave

lengths for the exclusive use of distress calls and public business within which each would have exclusive rights, and upon which reservations all others would be forbidden to encroach. There would be one reservation of wave lengths for calls of distress, another reservation or several of them for departments of the Government. That plan would assure to them immunity from interference from any source. Outside of these reservations the entire range of wave lengths would be left free for the use of the public in general.

I shall show one way in which the bill under consideration would fail to provide as efficient protection for public business as the Burke bill. A government station making its call might find that there was another station sending a signal by the same wave length. It could not establish the communication desired until it has induced the private station to cease operating. The latter, acting in entire good faith, might not hear the call of the government station and continue to operate, thus delaying the transaction of the public business. But if the government station had a range of wave lengths set apart for its exclusive use, as contemplated by the Burke bill, it would be assured of finding that range free at all times and there would be no delay. From the standpoint of the commercial station, this latter plan would have great advantages over the one contemplated by the Depew bill. Suppose, with the Depew bill in force, a commercial station were in the act of sending an important message, possibly one relating to the dispatch of trains and involving the safety of the traveling public. A government station arbitrarily choosing the same wave length might at any time compel the commercial station to suspend operations abruptly and indefinitely. No commercial station could begin sending a message with certainty that it could complete it. The result would be great embarrassment, not alone to wireless interests, but to the general public employing wireless stations. This would not occur if the Government had its own range of wave lengths as contemplated by the Burke bill.

A fair comparison of the two schemes of regulation may be illustrated by this example: Take a drawing-room car containing 24 seats. According to the Burke plan 24 tickets would be sold, and in accordance with their common practice each ticket would entitle its holder to one certain seat. All ticket holders would be accommodated and there would be no confusion. According to the Depew plan, each of the 24 tickets would entitle the holder to admission to the car, without designating any particular seat. Two of the tickets would provide that the holders thereof might, from time to time, take any seats in the car that they pleased, whether occupied by the holders of some of the nonprivileged 22 tickets or not. This would certainly occasion inconvenience to the 22 persons and it would not accommodate the privileged passengers better if, in order to secure seats, they had to eject other persons instead of being provided with definite seats of their own. It would not be as advantageous to the privileged few to have the right to any seats rather than be sure of finding a certain seat vacant. At the same time the convenience of the remaining 22 passengers would be very much enhanced if they knew where and how they were going to be accommodated.

Senator BOURNE. One wave length will not interfere with another, will it?

Mr. HAYDEN. That is a proposition, sir, that can hardly be questioned.

Senator BOURNE. I am only asking for information.

Mr. HAYDEN. Radio communication is established by vibrations of a medium called ether, resembling in some respects vibrations of the atmosphere which transmits sound. Waves of the ether like waves of sound can be regulated and measured. Waves of different lengths do not interfere with one another. To illustrate: Strike the C note on a piano and the C string of a violin in the same room will vibrate in sympathy with it; but no other string on the violin will vibrate. In the same way, if the sending apparatus of a wireless station causes vibrations of the ether, having a certain wave length, and there are receiving stations similarly attuned, they will vibrate in sympathy with the sending station and record its message. That receiving station will not respond to any other wave length.

Senator BOURNE. How many wave lengths are recognized?

Mr. HAYDEN. They are limitless.

Senator BOURNE. Then it is feasible and practicable to segregate these wave lengths when there are so many different ones?

Mr. HAYDEN. Yes, sir.

Senator BOURNE. And to set aside certain wave lengths for relief purposes only?

Mr. HAYDEN. Yes, sir.

Senator BOURNE. It is feasible?

Mr. HAYDEN. Yes, sir; absolutely.

The CHAIRMAN. Does any one dispute that fact?

Mr. HAYDEN. Mr. Chamberlain, in his opening remarks, said that it was generally conceded that a regulation by reservation of wave lengths would not be sufficient for the prevention of interference. We have never made that concession. We are convinced that it would be sufficient. Radio communication being effected by vibrations of ether, the rapidity of the vibrations—i. e., the length of waves produced, control the communication between the sending and receiving station. We know of no means other than by regulation of wave lengths to prevent interference. Interference results when two or more stations in the same neighborhood employ the same wave lengths at the same time. But by adopting different wave lengths and suitable appliances, two stations close to one another can send messages at the same time and not interfere with one another. On that subject I will quote from a report of Rear-Admiral H. M. Manney, U. S. Navy, Chief of the Bureau of Equipment, dated April 17, 1905:

The interference preventer will practically exclude any wave varying in length by as much as 3 per cent from the wave to which the preventer is adjusted, provided the intensity of such interfering wave is not greater than that of the wave to be received. As the interfering wave increases in relative intensity, the difference in wave length must be increased also. Unless very accurately adjusted, the interference preventer absorbs part of the strength of the wave, and the more imperfect the adjustment the greater the absorption. The adjustment of the interference preventer is somewhat difficult, but once made, it is practically constant.

With this connection it is possible to absorb or shunt to earth waves so strong that close connected they will burn out the receiver, and at the same time to build up a weak resonant wave to sufficient strength to be read. *A variation of 10 per cent in wave length has been found sufficient to cut out waves so strong that they could not be received direct either on the electrolytic or coherer receivers, while at the same time a weak wave which the coherer would just record was plainly received on the telephone. With waves of more nearly equal intensity a variation of 3 per cent in length is ample.*

Senator BOURNE. These wave lengths can be described so that they can be legalized, can they not?