

Secretary Daniels Radio-Phones to U. S. Battleship at Sea

ONE of the most inspiring tests of the wireless telephone recently took place when Secretary of the Navy Daniels called up the commander of the U.S. Battleship *New Hampshire*, first in Hampton Roads, Va., and later while she was steaming at sea.

The power to send wireless messages, more than anything else since the adoption of steam for motive power, has revolutionized naval strategy and made possible maneuvers not even dreamed of by the great naval commanders. The demonstration which took place at the Navy Department of the practical operation of the wireless telephone added the beginning of a new chapter to the great book, not yet finished, of communications at sea.

On that occasion Secretary Daniels, standing before the desk in his office, surrounded by officers of the navy and the army, by high officials, including the head of the scientific corps of the company which had developed the system, and by the newspaper men of Washington, received from Captain Bullard what to all appearances was an ordinary desk telephone. Without preliminaries, he asked as simply as if about to use the 'phone in an ordinary way: "Is that you, Captain Chandler?"

And in quite as matter of fact way, Captain Chandler from the U.S.S. *New Hampshire*, lying out in Hampton Roads, replied by wireless telephone: "Yes, Mr. Secretary, this is Captain Chandler. Have you any orders for me, sir?"

The reply was heard by the dozen or more guests, who were holding auxiliary receivers to their ears as plainly as if the captain had been talking over a wire from a nearby city.

Secretary Daniels gave a wireless order

he on shipboard must have heard the Secretary quite as clearly as they had heard Captain Chandler.

The talk between ships and shore was continued, demonstrating the practical accomplishment of an object long sought. It seemed to those who watched and listened that a Prospero had by waving his wand called "the spirits from the vasty deep" to serve and a little incongruous that a man dressed in everyday clothes and wearing shell-framed glasses should in so simple a way, pledge the patriotic support of the corporation he represented to the navy to insure the mobilization of the communications over land and sea. That is what Mr. Bethel did; and Mr. Carty, the head of that company's scientific and practical force, the man who above all others had brought this event to pass, assured the guests that the United States Navy may now have a means of communication such as no other country can possess.

Incidentally the tests made the next day with the *New Hampshire* steaming at sea outside the capes confirmed the success of the new system, which is the logical outgrowth of earlier triumphs in sending wireless messages from Arlington to San Francisco, by means of the extremely efficient radio stations at these places.

Following the trial of the wireless telephone other tests were made by calling up, at a moment's notice, naval stations on the east, west and south shores of the country, and asking all sorts of military questions, to which answers given in military fashion were immediately received.

The battle of New Orleans was fought in 1815, two weeks after peace terms had been made, because the news had not been received from Europe. Although telegraph

would take their way all over the continent, traversing the distance in a fraction of a second.

The powerful government radio station at Radio, Va., popularly termed *Arlington*, was utilized for these tests. The apparatus is capable of being linked up with land lines, as in this instance, and has been used to form the major link in a line-radio-line test, i.e., where the ordinary telephone speech (transmitted over a line) was converted into radio waves, then reconverted into electric currents on a second telephone line. This demonstrates the marked flexibility of the system now used by the government.

It involves the use of several hundred evacuated glass bulbs, resembling huge tungsten lamps. These tubes act on the principle of the de Forest audion detector, and produce a considerable amount of undamped wave energy at radio frequency. The tubes, known as *pliotrons*, develop about $\frac{1}{2}$ ampere of high frequency current each (1 k.w. each). To talk across the continent about 300 bulbs are necessary. They are all connected in parallel, and by a special transformer connection, it proves an easy matter to control the antenna output of about 70 kilowatts by means of an ordinary *Bell* telephone transmitter when speaking into it in the usual tone of voice. Such is the work being accomplished by the U.S. government and commercial radio experts, and it is hoped that this research will continue. Without a doubt the present equipment stands second to none, and let us trust that it will continue to be.

The radio branch for material or construction work is under the bureau of steam engineering, Admiral Griffin. The officer in charge is Lieutenant S. C. Hooper. Some of the material is purchased, but much is made in the government works, all under the specifications and designs of the department. The service, excellent as it is, does not satisfy the exacting men in charge. They are planning and striving to make improvements which will put the navy just a little further in front of all rivals, in the instruments for giving and receiving intelligence and for controlling the movements of the American fleet.

ELECTRIC DRY CELL SIGNAL LAMP VISIBLE 100 MILES.

E. G. Fischer, chief of the Instrument Section of the Coast and Geodetic Survey, Department of Commerce, has just completed the design and construction of a signal lamp which will be used during the coming summer in the mountainous regions of Idaho and Oregon on primary triangulation where the distance between stations is frequently as much as 100 miles. This lamp has been tested by the Bureau of Standards and is shown to be more than 150 times as powerful as the acetylene signal lamps which have been used for a number of years by the Survey. These acetylene lamps have been observed with the telescope over lines more than 120 miles in length. The new lamp is an electric one, with a specially designed filament, and the power is the ordinary dry cell. While no tests have been made on the field with the new lamp, it is expected that ordinary haze or smoke will seldom prevent observations. The Bureau of Standards has made careful tests of the new lamp and states that the larger sizes of this lamp are so powerful as to be scarcely comparable with the acetylene lamp.

Electricity is used extensively for operating private and commercial ice-making machines.



Talking to the U. S. S. *New Hampshire*, in Hampton Roads, by Wireless Telephone from the Navy Department, Washington. Secretary Daniels with Transmitter, J. C. Carty at His Extreme Left and E. N. Bethel at His Right. Capt. Bullard, U. S. N., Second to the Left of the Secretary

for the *New Hampshire* to proceed to sea and to expect further orders by wireless telephone the next morning. In response to the Secretary's inquiry, Captain Chandler said that he understood his instructions perfectly, and repeated them so nearly word for word that all the auditors knew that

service on shore was established, it was not until after the civil war that a cable message could find its way from one side of the ocean to the other. Now, though the cables were cut, the messages would fly through the air across the seas, and although all wires were down, winged words