

# RADIO WAVE SPEED FOUND

### Slower Than Light According to Captain T. J. See.

SAN FRANCISCO (AP)—The discovery that the radio wave travels slower than light was announced today by Captain T. J. See, professor of mathematics in the United States navy, government astronomer at Mare Island navy yard and well-known authority on the theory of Aether.

According to Captain See, the radio wave travels around the globe with a velocity of 145,000 miles a second, while light travels 186,000 miles a second. Captain See considers that his discovery in the velocity of the propagation of the radio wave about the earth may prove the most notable step in the development of the wave theory since Roemer's original discovery of the velocity of light in 1675.

Full details of Captain See's discovery have been sent for publication to the Astronomische Nachrichten, the International Journal of Astronomy, at Kiel, Germany. An outline of the chief conclusions, however, communicated to the London Times is condensed below.

The continuation of recent researches on the New Theory of

the Aether has brought out a very surprising result, namely, definite proof that the radio wave travels around the globe with a velocity at least ten per cent smaller than that of light, 145,000 miles per second, in place of 186,000 miles per second.

Since the wave is propagated in the Aether, it is remarkable that there should be the long recognized velocity, for light in free space, and a smaller velocity for the radio wave as it bends around the globe. The result is therefore of deep interest to the physical philosophers associated with the Royal Society of London, and to a large body of operators in radio and electric engineering, in Britain, on the Continent and in the Colonies.

In the year 1914 there was an official interchange of signals between the Naval Observatory at Washington, and the National Observatory at Paris. The work was carried on with all the skill and precautions attainable at that time, and the mean velocity of the wireless wave found to be about 173,000 miles per second. This figure is about 18,000 miles per second less than that of light in free space, but ten years ago we did not suspect the cause of the velocity falling seven per cent below the velocity of light.

Early in March of the present year, a wireless signal was sent from the sending station near New York to Warsaw, Poland, and reflected back in 9,954 of a second of time. The distance is 5,500 miles, and the speed of the transmission comes out about 158,000 miles per second, or about 15 per cent less than the velocity of light. This observation was carefully times by a coincidence process, with apparatus similar to that used in moving pictures, for producing exact coincidences, and thus no doubt is essentially accurate.

The mean of the two independent determinations of the wireless wave is 165,500 miles per second, or 20,500 miles per second less than the velocity of light. This is eleven per cent slower than light travels in free space. So great a falling off in speed could hardly be the result of chance. And thus we are led to recognize the fact that the radio wave certainly travels over 10 per cent slower than light, in distances such as those separating Europe from America.

4—What is the cause of this slower velocity of the wireless wave? It is simply this: The Aether, or particle of Aether in only one-fourth thousandth part as large in diameter as the hydrogen molecule—so that compared to ordinary molecules of the air or oxygen, the Aetherons would be moving with a velocity of 294,000 miles per second. The wave travels through the solid earth as well as through the air and free space but is much resisted in the solid globe. As the aether is 689,321,500-000 times more elastic than air in proportion to its density—thus almost infinitely elastic—the medium cannot suffer a break in its continuity, yet the movement above the earth is held back by the slower motion of the wave in the earth. The resistance in the globe thus acts as a drag on the wave at its base, the result is that the wave bends around the earth, as long known yet heretofore not generally understood.

5. This bending of the wave front in the aether, due to refraction at the base of it in the earth, is quite analogous to change of form of water waves as they run ashore to form breakers. The advance of the water is resisted at the base, while that of the crest is unimpeded; the top of the wave thus gains upon the base and its form changes, according to Mathematical Laws which Sir George Airy profoundly investigated in his great work on Tides and Waves Encyclopaedia Metropolitana, 1845.

6. In my researches on the New Theory of the Aether, 1920, I first explained the bending of the wireless wave about the earth, by the above process, involving increased resistance within the globe. It is exactly analogous to the bending of light going through a prism. Four years I even foretold that wireless could be used to increase the safety of communication in mines; and now wireless is being installed in all deep shafts, by our National Bureau of Mines.

7. Recently a concert going on at Chicago was distinctly heard near Cleveland, Ohio, by observers at a depth of over 500 feet in solid earth, and connected with the surface only by a very narrow passage. And in Idaho and Arizona radio waves have been received in mines at a depth of about half a mile. This is direct experimental proof that the wave travels through the solid globe itself, and therefore must move slowly in this dense mass; the wave front being made to bend around the earth, when it advances to great distances, as from Mexico to Warsaw, Chicago to Melbourne, Chicago to California, Toronto, Pittsburgh, etc., Paris to Tokyo, China, etc.

8. The French investigators have carried out some of the most valuable observations on the propagation of the radio-wave to great distances about the globe. They have made use of the Lafayette Towers at Bordeaux, which operate with the very great wave length of 22,500 metres. In long distance transmission, having found that the radio-wave practically encircles the globe, they sent a ship to observe the signals near the Antipodes of Bordeaux, in latitude 44 degrees 50 minutes south, longitude 159 degrees 31 minutes 4 seconds west, near Chatham Islands 200 miles east of New Zealand. The commanding officer of the ship was instructed to explore the region about the Antipodal point and note carefully the intensity of the radio signals from Bordeaux. Having operated for some time by circling about the Antipodal point, the French observers reached the conclusion that the intensity is somewhat

augmented right at the Antipodes of the sending station—showing that the wave encircles the globe in all directions from Bordeaux, and thus is noticeably intensified at the focus in the Antipodes.

9. This experiment is notable for two reasons:

(a) The use of high power in transmission and a wave of great length which assures the propagation of the wave through the earth, yet with a slower movement in the solid globe, and the resulting bending of the wave clear around the Antipodes.

(b) The distance is greater than in any other record based on careful observations, and the only one with evidence of the focusing of the waves after encircling the earth in all directions from the sending station.

"An adequate theory of the bending of the radio-wave about the earth long was lacking. Prior to that given by me four years ago the only one put forth was a tentative one based on reflection from ironed gases in the upper layers of the terrestrial atmosphere. But now that radio waves are everywhere beginning to be observed and used in deep mines—showing that transmission takes place through the solid earth and therefore travels more slowly in the globe—the theory of reflection is as unnecessary as it is inadequate.

"The process of nature evidently is similar to the transmission of light through a prism, the wave front being bent by the greater resistance at the base. And the observational proof of this view in the high power and long waves required for overcoming resistance in this long distance transmission. If the reflection theory were admissible, short waves ought to suffice, yet such waves are ruled over by actual experience, which thus verifies the refraction theory reached in the first paper on the New Theory of the Aether, 1920.

"The failure of many eminent mathematicians to explain the bending of the wireless wave about the globe, indicates that the old hypothesis about ionization in the atmosphere and reflection are unworthy of contemporary science.

"The view now strikingly confirmed by observations of velocity in wireless telegraphy, showing definitely that it penetrates deep into the globe and this retards the wave front in the earth, with resulting bending of the wave about the globe, gives a valid foundation for some of the most striking phenomena in physical science. The results are of interest also in connection with the wave theory of magnetism and the cause of Universal Gravitation, because they bear on the cause of the fluctuation of the Moon's Mean Motion."

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# ESKIMOS RICH SAYS REPORT

### Passports to St. Peter In Old Russian Graves

CANTWELL, Alaska (AP)—Thirty years ago the Eskimos of Alaska had nothing, but now they control nearly \$5,000,000 worth of stock and property, according to William T. Lopp, superintendent of the Alaska division of the United States bureau of education. He has been here inspecting reindeer herds grazing in the plateau of Broad Pass.

Because of the encroachment of privately owned herds of reindeer on the Seward peninsula and Point Barrow section of the territory, it is planned, eventually to remove the Eskimo herds to Broad Pass, with Cantwell as the directing base. The first herd of 5,000 animals will be driven from the Seward peninsula to Iditarod next fall, allowed to recuperate, and started again in time to cross the big rivers before the break-up in spring.

"Particular care must be exercised," said Mr. Lopp, "in handling the reindeer fawns. Once the human hand touches a fawn, its mother drowns it. For that reason the Eskimo herders wear gauntlet reindeer-skin gloves and a reindeer-skin parka, and also spread reindeer skin in the sleds on which the little creatures are placed until the herd rounds up for the night and they can be delivered to their mothers.

In bringing over the herds from the Point Barrow region it will be necessary to drive them to the Yukon river, there to load them on specially constructed barges on which they will be towed up the river to Nunana, where they will be shipped by the Alaska railroad to Cantwell.

It is estimated there is a strip

300 miles square in this vicinity suitable to reindeer grazing. With rail transportation at hand, these interested in the industry predict that some day before long reindeer meat will be as common as mutton in the markets of the gates.

### Passports to St. Peter In Old Russian Graves

LENINGRAD (AP)—Passports for the satisfaction of St. Peter were given to the departed early in the nineteenth century throughout Russia, according to documents found recently in old graves near here. These documents were issued usually only to members of the wealthy classes, as records indicate that they cost a lot of gold and were considered as a reasonable guarantee that the departed person so honored would be welcome at the Golden Gates.

A sample of the passports reads: "I, Nicholas Steyevich, bishop of St. Petersburg, do hereby certify that the person herein mentioned lived as a good Christian, and, although he sometimes sinned, yet he confessed his sins and was forgiven. He worshipped the saints

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he feasted and begged, and was human. Considering the fact that the dear departed one has made his peace with Him, and confessed all to his father confessor, I gladly and that our beloved friend will have due and free access to Heaven and enjoy all the privileges therein and hope that it will be duly honored forever without any hinderance."



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2 tablespoons Amaizo  
2/3 cup sugar  
1/2 teaspoon salt  
1/8 teaspoon nutmeg  
1/2 teaspoon vanilla extract  
2 oz. (2 squares) melted chocolate  
or 5 tablespoons cocoa  
1 cup milk  
3 cups flour  
3 teaspoons Royal Baking Powder

Mix the Amaizo and sugar together; add the salt, nutmeg, vanilla and melted chocolate (cooled); then add the milk. Add the flour and baking powder which have been sifted together; roll out on slightly floured board 1/4 inch thick. Cut out and fry to a light brown in deep Amaizo hot enough to brown a piece of bread in 60 seconds (375° F.). Drain well and sprinkle with powdered sugar just before serving. Makes 2 dozen doughnuts.

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