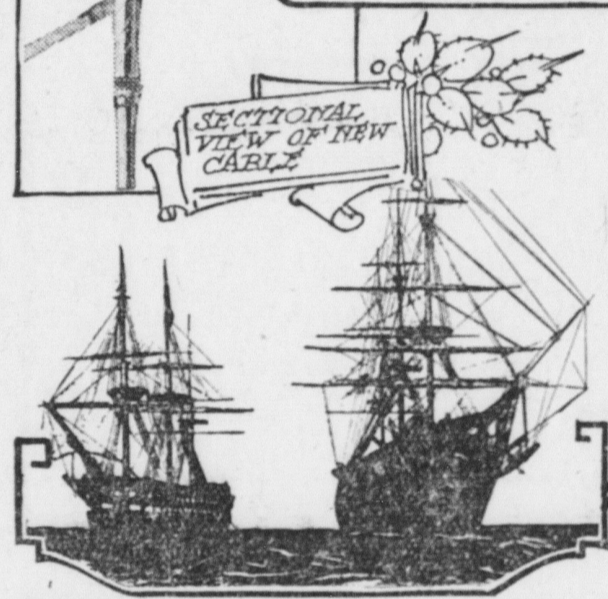


# The World's Fastest Cable



BRINGING THE CABLE ASHORE



"AGAMEMNON" AND "NIAGARA" WHICH LAID THE 1858 CABLE

By ELMO SCOTT WATSON

**T**HE recent announcement that the Western Union Telegraph company had completed laying a new cable across the Atlantic which will have the distinction of being "the world's fastest cable," in the sense that it can transmit legible signals at least five times as rapidly as any heretofore laid, recalls the whole romantic history of man's attempt to bridge great distances and speed up communication between the distant parts of the earth. It recalls particularly the name of Cyrus Field, the American paper merchant who, undaunted by several failures, persisted until success crowned his efforts and made his name immortal.

When the new cable was landed in New York last month, it was an event of great importance, but so accustomed have we become to events of world importance that there were none of the scenes of wild enthusiasm which swept the country upon Cyrus Field's successful completion of his task. In those days they were more given to public celebrations of great events by torch-light processions and appropriate oratory.

Up until that time rapid communication had been impossible. When the treaty which ended the Revolution was signed in 1783, the citizens of the new Republic did not know it until 96 days later. Conditions were much the same by the time of the War of 1812 and, as every school-boy knows, the battle of New Orleans was fought after the treaty of peace had been signed.

Although faster steamships had speeded up communication between the Old world and the New in the next four decades, there was still no instantaneous communication and men had laughed at Field as a dreamer and something of a crank when he first proposed to link England and America with an undersea cable over which telegraphic messages could be sent.

But when the Agamemnon and the Niagara completed their job of laying the first cable in August, 1858, and Field's faith in his project was justified, those who had derided him were among the first to hail him.

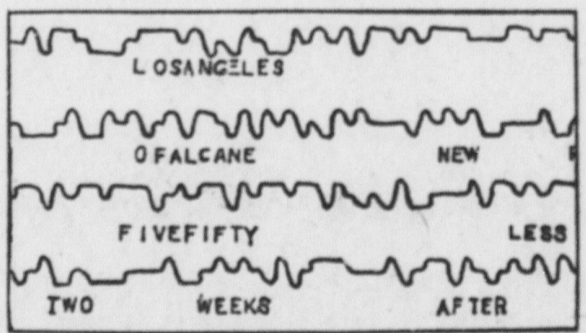
With the coming of the first transatlantic cable came the prospect of business quickening its pace. This prospect was at first viewed with considerable incredulity, but as the messages of Queen Victoria and President Buchanan flashed over the wires doubts gave way to tumultuous rejoicing. The new line was in actual operation, but it had come only after a series of disappointments. It had cost its projector twelve years of constant toil and had necessitated more than thirty trips across the Atlantic.

## NEW YORK'S CELEBRATION IN 1858

destruction. Similar demonstrations took place in other parts of the United States. From the Atlantic to the Valley of the Mississippi and to the Gulf of Mexico the firing of guns and the ringing of bells were heard in every city.

The new cable broke down after two months of operation and the courageous American paper merchant who had been the force behind the enterprise could raise no more funds in America. Most of the original capital lost in his first venture had, indeed, come from England, the majority of the 345 men who had subscribed one thousand pounds each to the enterprise being Englishmen. And with a Civil War impending and soon actually under way Field could look for no further financial aid on this side of the ocean.

He went again to England and succeeded, after long negotiations, in obtaining capital with which to build and lay a new cable. The Gutta-Percha company, which had then a practical monopoly of the necessary insulating material, was given the order to build the new cable, which was completed in 1865. The steamship Great Eastern, the largest craft ever built up to that time—



How a Cable Message Comes In.

larger, in fact, than any ship constructed for another forty years—which had proved a commercial failure in spite of her size, or perhaps because of it, was chartered to lay the new cable. Twelve hundred miles had been paid out when the cable parted, on August 2, and all efforts to recover it proved fruitless.

Once more ruin stared Field's project in the face. It seemed as if fate had decreed that there should never be telegraphic communication between the continents. But at this critical juncture in cable history John Pender, the head of the Gutta-Percha company, came forward with the proposal to risk a quarter of a million pounds of his own money in the effort to carry out the project. Under his leadership the Atlantic Telegraph company was reconstituted as the Anglo-American Telegraph company with a capital of 600,000 pounds of which he subscribed for nearly half. The Gutta-Percha company became the Telegraph Construction and Maintenance company. A new cable was made and enough additional to complete the cable of 1865. The Great Eastern was purchased and on July 13, 1865, steamed into Trinity bay, Newfoundland, trailing behind her a continuous line of cable stretching back to the Irish coast. The shore end was landed safely, the Great Eastern steamed eastward again, grappled for the lost end of the 1865 cable, recovered it, spliced on a new section and on September 8 landed this also in Newfoundland.

It is interesting to note that in the new cable which spans the Atlantic from Bay Roberts, Newfoundland, to Penzance, England, history is repeating itself, for in 1912 the Western Union Telegraph company became the operating successor of the Anglo-American Telegraph company, leasing the five cables then owned by the original company, between Great Britain and the United States, and so great is the advance over all previous cable systems which the new cable inaugurates, its completion seems destined to

mark the beginning of almost as much of a new era in international communications, as the laying of the 1866 cable did.

Though the deep sea section of the cable is only an inch in diameter, an examination of a cross-section of it, as illustrated above, shows it to be composed of a number of distinct parts consisting of different materials.

The innermost section of this slender line of communication which will link two continents is the copper conductor. It is a round wire not quite one-fifth of an inch in diameter. This carries the electric current through the cable.

Around this wire are wrapped six flexible copper tapes which, in case the cable breaks, carry the current around the gap. The purpose of these copper tapes is to give flexibility to the conductor. An accident to the cable lying on the floor of the Atlantic which might break a solid conductor consisting of a single strand and put the line of communication out of business could hardly break all the strands of a taped conductor.

Wrapped around the 3,500 nautical miles of this copper conductor to span the Atlantic from New York to London will be a continuous strip of permalloy, the new magic metal which will give the cable its capacity of 2,500 letters per minute. Permalloy is an alloy of iron and nickel which under certain conditions has a magnetic permeability many times that of any other known substance. This wrapping prevents the leakage of current common to the older types of cables and will give the new copper strand its great speed and make it the world's fastest cable.

Next to the permalloy is the insulation consisting of three layers of gutta percha. This is the only substance yet discovered which combines the necessary insulating qualities with elasticity, simplicity of manipulation, and durability. It is obtained from a tree which grows in the Malay peninsula and Malaysia. The process of gathering it consists in tapping the gutta tree much as a sugar maple is tapped in North America and collecting the sap which exudes. The most familiar use of gutta percha is in the manufacture of the outer shells of golf balls.

Over the gutta percha insulation is placed a layer of jute yarn to act as a cushion for the armor which protects the cable from being broken by any accident which might occur on the bed of the ocean.

This armor consists of eighteen galvanized steel wires, each having a diameter of nine-hundredths of an inch. Before being applied to the cable each is wrapped over its entire length with a fabric to prevent its oxidation under water. Finally, the cable is wrapped with two servings of jute yarn saturated in coal tar, wound on spirally, which form the outer covering.

This copper strand connecting the Old World with the new will be the twentieth transatlantic cable and the ninth to be operated by the Western Union.

Although it would seem that radio development had made deep-sea cables obsolete, the fact remains that cable companies continue to spend millions of dollars on new cable costs, for all that they have a full knowledge of radio's capacity and the lines of its probable future development. The importance of cables in world relations was demonstrated at the close of the World War when an international complication threatened over the island of Yap. Yap ordinarily would be as unimportant as its name suggests were it not for the fact that the question of a cable base was involved. So it is likely that the future will see the network of cable lines connecting all parts of the earth increase instead of decrease and whenever a new one, and especially one such as the "world's fastest cable" in which important new developments are concerned, is laid it will be news and big news.

## HOW TO KEEP WELL

DR. FREDERICK R. GREEN  
Editor of "HEALTH"  
(©. 1926, Western Newspaper Union.)  
**BREAD AND WATER**

**A**N EARNEST and conscientious judge out in Nebraska, determined to enforce the Volstead act, has sentenced several violators of the law to jail and added to the confinement an order that the culprits, while serving their sentences, should be kept on a bread-and-water diet.

At once the newspapers took up an animated discussion as to whether such an order was not equivalent to a death sentence. As some of the papers put it, in flaming headlines, the real question was "Can men live on bread and water?"

To ask such a question shows a singular disregard of history and also of the condition under which millions of human beings are living today. One need go no farther than the lessons he learned in Sunday school in his childhood.

In the nineteenth chapter of Second Kings is told a dramatic incident in the life of Elijah, one of the most fearless warriors of the Jewish nation ever produced. Fleeing from the wrath of Queen Jezebel, 750 of whose heathen prophets he had slain, Elijah "went for his life" a day's journey into the wilderness. Worn out and hungry he lay down and slept under a juniper tree. When he awoke, an angel of the Lord said unto him "Arise and eat." And he looked and, behold, there was a cake baked on the coals and a cruse of water. And he arose and ate and drank and went in the strength of that food forty days and forty nights unto Horeb, the mount of God.

Wild eastern legend, says the rationalist. Very well, let's have some modern witness.

Lowell Thomas, before the war a Chicago and New York newspaper man, was sent by his paper to Egypt to meet Col. T. B. Lawrence, a British army officer who had organized and was leading the Arabs against the Turks. In his recent book, "With Lawrence in Arabia," he tells some remarkable stories. Lawrence was a young Englishman, five feet three inches tall and so delicate that when he first offered to enlist the British recruiting officer told him to go home and grow. Young Lawrence organized the most efficient camel corps the world has ever seen and drove the Turks out of Arabia. Wells in the desert are three days' journey, often 250 miles apart. Lawrence and his men broke all records, even those records of the toughest Arabs in desert travel, averaging 1,500 miles a month.

What was their food equipment for a six weeks' trip across the desert? A forty-five pound bag of flour. Each man lived on unleavened cakes baked on coals and carried a pint of water which had to last for three days.

Can men live on bread and water? Ask Lawrence and his Arabian warriors.

## TAKING A SICKNESS CENSUS

**H**OW much sickness is there in any average town in a year? Not how many deaths, that can easily be determined. But, beside the sicknesses that result fatally, how many people are ill who recover and how much time is lost through unnecessary and avoidable sickness?

Health officers have been trying for some time to answer some of these questions. In a recent issue of the Public Health Reports is an article by Edgar Sydenstricker of the United States public health service, giving figures of an extended survey of 1,815 families in the town of Hagerstown, Md., for 28 months. In these 1,815 households were 8,587 persons. Not all of them, of course, were under observation for the entire 28 months, but the total number amounted to what Doctor Sydenstricker calls 16,517 years which would be equal to a town of 16,517 persons for one year.

Of these, 8,001 were men, and 8,516 were women. So the proportion of sexes was more equally divided than would be found in the average town. The survey covered the time from December 1, 1921, to March 31, 1924, 28 months embracing all the seasons.

In this group and during this time there were 17,847 definite and separate cases of illnesses, or a little more than an average of one per year per person. Of these, 10,844, or over 60 per cent were diseases of the respiratory tract. This included influenza or grippe, all forms of pneumonia, pleurisy, tonsillitis, croup, hay fever, asthma, tuberculosis and all troubles with the throat and lungs.

Of all forms of epidemic diseases, there were 1,448 cases, or 8 per cent. This includes typhoid, measles, whooping cough, scarlet fever, diphtheria, and all other epidemics.

General diseases, such as cancer, rheumatism, diabetes, etc., caused 359 illnesses, or 2 per cent. Diseases of the nervous system caused 728 illnesses, or 4 per cent, while eye and ear diseases totaled 303, or 1.6 per cent. In spite of all we hear about the increase of heart disease and high blood pressure, illnesses due to diseases of the heart and blood vessels, only amounted to 303, the same as eye and ear troubles. Digestive troubles formed a large group, 1,504, or 8 per cent.

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"Gosh!—that old dog is a sight!" said a hypercritical acquaintance, from over beyond Presbyterian Hill. "He's lame, skinny, blind in one eye, and 'pears to have ticks all over him. He looks as if he had been scalded, too."  
"Eh-yah!" replied Gap Johnson of Rumpus Ridge. "He's got the mange, also the biggest appetite you ever seen. He's covered with fleas, and howls all night. He hain't good for a lying thing on earth, and I'd take him out and shoot him if it wasn't too much trouble to bury a gun."  
"What do you call the varmint?"  
"The only name that will fit him—'son-in-law.'"—Kansas City Star.

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## He Remembered

Two children, a brother and sister, had a dispute which ended in a fight. The little boy was on a visit to his aunt's, and, wishing to relate the affair, said: "Me and sister had a fight."  
And the aunt asked: "Who whipped?"  
The little fellow honestly answered: "Dad did!"

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## Resinol

Family Bookkeeping  
"I wonder if Bill knows his own fallings." "He ought to; his wife keeps the list."—Boston Transcript.

One may admire an unostentatious efficiency and hate the word.

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