New Ocean Cable to Rome

"LOADED" FOR HIGH SPEED; OLD ONES TO BE OBSOLETE.

A new epoch has begun in submarine telegraphy—an epoch in which science has achieved new triumphs over time and distance.

The epoch began officially recently when a group of American, English and Italian electrical and cable experts gathered at Rockaway Beach to witness the first operation in the laying of a new trans-Atlantic cable which will be the first to permit direct communication between the United States and Italy. This cable, which is to be operated by the Western Union Telegraph Company, will run from New York to the Azores and thence to Rome by way of Malaga, Spain. It is expected to be in operation between New York and the Azores early in October and through to Rome some time in January.

But the informal ceremonies which took place on the beach that day marked more than the initial work in laying a great trans-Atlantic cable. The cable itself embodies a new discovery in electrical science which, according to experts, may revolutionize cable comunication and result in the replacement of many of the under sea lines now in operation.

Last Cable Laid a Year Ago.

The last trans-Atlantic cable was laid between Rockaway Beach and Ireland by the Postal Telegraph Company a year ago, making the 17th cable across the Atlantic. Up to that time there were more than 298,000 miles of telegraph cable in operation in various parts of the world, made up of some 3,000 separate lengths of which about 2,540 were administered by the various governments concerned and the rest by private companies. Of the world's cables in 1921 more than 130,000 nautical miles were owned by British companies, 71,000 miles by American companies and 24,000 miles by companies of other countries.

Due to the gradual increase in the number of cables the general trend of cable rates has been downward; and at no time, according to officials of telegraph cable companies, have they ever been raised. The last general decrease in rates was in April, 1922.

Cable vs. Radio.

In answer to the question raised by many as to whether the radio will supplant the caple, the following report has been made jointly by engineers of the Western Union Telegraph Company and the Western Electric Company:

"Whatever the future may hold in the competition between the ether wave and the cable as carriers of international messages, the advantage of the moment is all with the cable on the points of speed, certainty and secrecy and, potentially if not actually, on the point of cost. For the Western Union's new "loaded" cable is such that its overhead charges are little if any greater than those of a pair of trans-Atlantic wireless stations, while the operating cost of the cable is definitely less."

Engineers of the Western Electric Company after years of experimenting developed a method of "loading" the cable or increasing the electrical inductance of the copper conductor so that messages may be transmitted at a speed from five to eight times as great as the highest speed now attained in standard cable practice. This "loading" is accomplished by wrapping the central wire of the cable, throughout its length, with a thin, narrow tape of a new metallic compound which has been given the name "permalloy."

Speed of 1,500 Letters a Minute.

The immediate effect of "loading" is to multiply by more than five to eight times the number of decipherable signals which can be sent through the conductor in a given time. There are only two or three deep sea cables of the old type over which a speed of as high as 250 letters a minute can be maintained. The fastest cable now in operation has a speed of little more than 300 letters a minute, and the majority of cables are operated at a speed of approximately 150 letters a minute. Under deep-sea tests more severe than anything likely to be encountered in actual service, the new type of cable has maintained a continuous speed, cable engineers report, of more than 1,500 letters a minute. The success of the new cable presages, among other things, the abandonment of many old cables which have reached a stage of physical deterioration where the maintenance and repair charges are unduly high in proportion to their earning capacity.

Just a fraction short of a fifth of an inch is the total diameter of the copper conductor and its wrapping of permalloy tape which will transmit messages between the United States and southern Europe with the speed of thought. That is all there is to the essential working part of any trans-Atlantc cable—a tiny metal strand not as thick as an ordinary pencil. Around this, various materials are laid for the insulation and protection of the little conductor, yet when ready for operation the deep-sea section of a cable is only an inch in diameter. This is the main body of the cable which will lie from one to three nautical miles below the surface of the sea. In shallow water near shore thicker protective armor is used although the essential working part or conductor is of the same size throughout.

Greatest Dangers Near Shore.

The danger of the cable breaking or being injured is much greater near shore than it is on the bottom of the sea many miles out. Below a depth of a very few fathoms there is said to be no movement of the water no matter how severe a storm may be raging on the surface. Close to shore, however, the ocean bed is stirred by storms, sandy bottoms shift and carry with them whatever is lying upon them. Icebergs ground in shallow water and often grind off the entire protective covering of a cable. Vessels anchor near shore and sometimes draw up cables with their anchors. Frequently steam trawlers dragging the ocean bottom for fish have entangled their trawls with cables which, if not heavily armored, would break under the strain. Wherever there are rocks a cable is subject to chafing which eventually wears it through. And sometimes, even in the deepest water, ships have gone down to find their last resting places athwart a cable.

At a depth of a few hundred fathoms below the surface the temperature of the sea water is constant at approximately 36 degrees Fahrenheit. Lower temperatures have been recorded in shallow northern waters where the presence of ice in great masses sometimes brings the temperature as low as 27 degrees. At the depths at which the cable rests upon the sea bottom there is no light, no movement of the water, nothing but darkness lighted only by the phosphorescence of the strange deep sea fishes which, able to resist a pressure of three to four tons to the square inch, die when they come into the upper waters, sometimes literally exploding from their own internal pressure.

Easy to Find Break.

To grapple for a broken cable in these black depths would seem to be an almost hopeless task. Yet so carefully are the records kept, showing the exact position of every mile of the cable, that it has become an everyday job to pick up a particular section of a cable in two or three miles of water. When a break occurs it is possible to tell, from the shore, exactly how far from either end the fault lies. Cable engineers know how to do it, although it savors of magic to the uninitiated.

The new permalloy-loaded cable is being laid for the Western Union by the same company which made it—the Telegraph Construction and Maintenance Company of England. This is said to be the oldest company engaged in the manufacture and laying of the deep sea cables and was formed for the purpose of laying the first successful transatlantic cable which was completed in 1866.

There was another Atlantic cable laid in 1858 through the efforts of Cyrus W. Field, an American. This, however, failed after two months of operation and Mr. Field was forced to go to England in order to raise funds for further cable work. In England, after long negotiations, he succeeded in obtaining the necessary 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 of that day, was chartered to lay it. Twelve hundred miles had been laid out when the cable parted and all efforts to recover it proved fruitless.

Saved by Pender's Courage.

Once more ruin stared Field in the face. But at this critical juncture John Pender, the head of the Gutta-Percha Company, came forward with a proposal to risk £250,000 of his own money in the effort to carry out the project. 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 steamship Great Eastern was purchased and on July 13, 1866, steamed into Trinity Bay, Newfoundland, trailing behind her a continuous line of cable stretch back to the Irish coast. The shore end was landed safely and the Great Eastern steamed eastward again, grappled for the lost end of the 1865 cable, recovered it, spliced on a new section, and on Sept. 8 landed this also in Newfoundland. Instead of a single Atlantic cable there were two. Cyrus W. Field's vision had become double reality due to the courage and sportsmanship of John Pender.

The memory of Cyrus W. Field was revived at the cable-laying ceremony of the Western Union at Rockaway Beach recently by the presence of several relatives of that pioneer. Among them were his only living son, Edward M. Field, 68 years old, of 77 Henry st.; his eldest grandson, Col. Cyrus Field Judson, and Cyrus Field Judson Jr.

Although Cyrus W. Field made possible the first trans-Atlantic cable, the first commercially successful cable was laid across the Straits of Dover from the South Foreland to Sangatte by T. R. Crampton in 1851. After several futile atempts another was laid two years later between Port Patrick in the south of Scotland and Donaghadee in Ireland. This was followed by various other cables between England and neighboring countries and revived an idea, suggested in 1845, of establishing telegraphic communication between England and America. This, however, was considered a formidable undertaking because of the distance and the depth of the water.

Cable Ship Makes Detours.

To the cable ship Colonia, owned by the Telegraphic Construction and Maintenance Company, has been given the task of laying the new cable to Italy. The cable is stored aboard the Colonia in four circular tanks, capable of holding 8,500 tons or about 4,000 sea miles of deep-sea cable. After landing the shore end the cable is paid out over the stern as the ship steams ahead. It sinks by its own weight to the bottom of the sea and follows the contours of the bottom, up over submerged mountains and down to the depths of the lowest valleys or across the level plateaus. Occasionally a detour has to be made where the soundings show a depth too great to permit the cable being picked up readily in case of trouble.

In the depths of the sea there is little to interfere with the cable's smooth running. The slender tie between the continents settles down into the ooze and soon becomes encrusted with the lime deposits and other sediment which constantly filters down from shore.

Near shore, however, the cable has a set of enemies, animate and inanimate. In the warmer waters the worst of these is the teredo, the boring worm against whose ravages ship bottoms are copper-sheathed. As a protection against the teredo the shore ends of cables have a layer of brass tape wound about them between the gutta percha insulation and the galvanized sheathing wires.—Brooklyn Daily Eagle, Sept. 7.

McMurdo's Store News

BONCILLA BEAUTY PRODUCTS.

Boncilla Clasmic Beautifier is the most important of all the many toilet articles manufactured by the Boncilla Laboritories. Thousands of testimonials written by grateful users tell of results obtained which are so marvelous and which commend the Boncilla method of Beauty culture.

The Pack O Beauty Set, a trial package of all the products, can be had for 60c.

Boncilla Beautifier (Pots)	$3.00
Boncilla Beautifier (Tubes)	1.35
Boncilla Vanishing Cream	90

Circular flounces are particularly good on dance frocks of chiffon and georgette.