Fifty Years of the Atlantic Cable

FIRST LINE LANDED ON AUG. 5, 1858—THOUGH A FAILURE, IT DEMONSTRATED THE FACT THAT COMMUNICATION UNDER THE OCEAN WAS POSSIBLE — PERSISTENCE OF CYRUS W. FIELD, ITS PROMOTER—ATLANTIC MESSAGES THEN AND NOW—THE PROGRESS OF HALF A CENTU RY.

New York Post: Wednesday, Aug. 5, was the fiftieth anniversary of the union of America and Europe by submarine telegraph. The first cable successfully laid extended from Valentia Island, off the coast of Ireland, to Heart's Content, Newfoundland, about 2,000 miles. The cable was landed on the American side on Aug. 5, 1858, but was not ready for use till Aug. 16. About seven hundred short messages were sent through it, but it entirely failed within a month. The fact was demonstrated, however, that direct communication under the ocean was possible, although few persons at that time believed that a submarine telegraph could be used for business purposes. Cyrus W. Field, to whose enterprise was due the laying of the first cable, thought differently. Not discouraged by this and other failures, he continued the work he had planned, interested London capitalists in it, and, in 1866, succeeded in establishing submarine communication, which has never since been interrupted.

Since then cables have connected all parts of the world. Today there are in operation 247,888 miles of cable, 207,000 of which are owned by corporations and 40,788 by different governments. Improvements have been introduced, too, which make the submarine wire as certain and speedy as the land wire. What was regarded as a dream prior to 1858 is now a substantial business reality.

Before Mr. Field became interested in the project to connect the old world and the new by telegraph, there had been much talk about submarine cables; but it was not taken very seriously, except by a few enthusiasts, like those who are now predicting that, in a few years, the aeroplane will be as common as the automobile. In 1845 Jacob Brett registered in London the "General Oceanic Telegraph Company," whose object was "to form a connecting mode of communication by telegraph from the British Islands across the Atlantic Ocean, to Nova Scotia, the colonies, and continental kingdoms." Mr. Brett could interest nobody in his plan.

THE FIELDS CONSULTED.

In 1854 F. N. Gisborne took up seriously the idea of connecting the two countries by cable. He received no support in England. The following year he came to New York, and laid his plan before Mr. Field, who studied it carefully, and, after consultation with his brother, David Dudley Field, decided that it was practicable. He went to Newfoundland and obtained a charter for landing the proposed cable on the shores of that island. He then set to work to build a telegraph line through Newfoundland, to form the connection between the terminus of the cable, the Maritime Provinces, and the United States, which work was successfully accomplished in 1856.

Mr. Field started for England in the same year, with the purpose of placing the scheme before the British public, and obtaining capital for the enterprise. After much hard work, he succeeded in raising sufficient money, and the Atlantic Telegraph Company was formed in December, 1856. Two ships were engaged to lay the cable—the Agamemnon, belonging to the British Government, and the United States steam frigate Niagara. The ships left Valentia Island on Aug. 7, 1857, and the cable was paid out successfully until Aug. 11, when it broke in 2,000 fathoms of water, after about 355 miles had been laid.

Mr. Field's financial supporters were discouraged by this failure, and he was obliged to make another effort to raise funds. In the spring of 1858 he made two more attempts to lay the cable, and both proved unsuccessful. He would not give up the project, however, and finally he succeeded in landing the cable on the coast of Newfoundland.

When the news spread throughout the country that the cable had been successfully landed, there were celebrations in nearly every city and town, and Mr. Field was overwhelmed with congratulations. A description of the celebrations was given in the Evening Post last Wednesday. These are some of the telegrams of congratulation:

PRESIDENT BUCHANAN'S MESSAGE.

From President Buchanan: "I congratulate you with all my heart upon the success of the great enterprise with which your name is honorably connected. Under the blessing of Divine Providence I trust it may prove instrumental in promoting perpetual peace and friendship between kins and nations."

Archbishop Hughes, of New York, said: "Under the blessing of Almighty God you have accomplished a great work. But your merit, if not your human glory, would have been the same, in my estimation, if you had returned to us what they would call a disappointed man, in whose scales of judgment enthusiasm had preponderated over common sense."

Edward Field, Bishop of Newfoundland, wrote: "Allow me to offer you my congratulations on the successful completion of the great enterprise which you have labored with so much and such admirable perseverance to carry through, in the midst of so many hindrances and discouragements."

From John I. Mullock, the Roman Catholic Bishop of Newfoundland: "God from time to time sends men like you and Columbus for the good of humanity, men with the head to conceive and a heart to execute the grand ideas with which he inspires them. You have now completed what Columbus commenced, and posterity will link your names together."

The New York Herald of Aug. 9, said: "The cable is laid, and now the most honored name in the world is that of Cyrus W. Field, although yesterday there were none so poor as to do him reverence. Bells are rung, and guns are fired, and buildings are illuminated throughout the land in his honor. The nation is proud of him, the world knows him, and all mankind is his debtor."

It was reported in some newspapers, the day after the cable was landed, that Queen Victoria had sent a cable message to President Buchanan. Of course, the report was untrue, as no messages of any kind were sent until Aug. 16.

After a few hundred private communications had gone under the ocean, it was found that the cable could be no longer worked, and it was never open for puolic business. Three years later the civil war broke out, and Mr. Field found it useless to make any further attempt to carry out his project until 1865. He had not lost faith, and when the war ended he revived the company. The steamship Great Eastern was chartered to lay the cable. It was coiled in tanks on board the great ship, which started from Valentia on July 23, 1865, and, after many mishaps, the cable was laid to within 600 miles of Heart's Content, Newfoundland. On Aug. 2 the cable parted in the deepest water of the Atlantic. Attempts to recover it were fruitless, and were abandoned till the following year.

Through Mr. Field's indomitable energy a new company was formed, and in July, 1866, the Great Eastern was again chartered and began playing another cable from Valentia. This attempt was successful, and the cable was landed at Heart's Content on July 27. Moreover, the Great Eastern recovered the cable that had parted in the previous year, and carried it to the Newfoundland terminus. Europe and America were then connected by two submarine cables, and Mr. Field's success was universally recognized. Congress voted to him a gold medal, with the thanks of the nation. The Paris Exposition of 1867 bestowed on him its highest prize, and the British Government showed its appreciation of his skill, courage and perseverance.

Queen Victoria, through Lord Derby, after bestowing honors on Englishmen prominent in the cable enterprise, paid a high compliment to Mr. Field. In a letter to the chairman of a banquet, given in Liverpool, Lord Derby wrote: "If, among the names submitted to and approved by her majesty, that of Cyrus W. Field does not appear, the omission must not be attributed to any disregard of the eminent services which from the first he has rendered to the cause of transatlantic telegraphy, and the zeal and resolution with which he has adhered to the prosecution of his object, but to an apprehension lest it might appear to encroach on the province of his own Government, if her majesty were advised to offer to a citizen of the United States, for a service rendered alike to both countries, British marks of honor which, following the example of another highly-distinguished citizen, he might feel himself unable to accept."

DEVELOPMENT OF OCEAN TELEGRAPHY.

The development of submarine telegraphing since 1866 has been remarkable. As has been said, 247,888 miles of cable are now in operation. Sixteen of the cables are under the Atlantic Ocean. Seven other cables under the Atlantic have been abandoned since 1866, because they could not be repaired satisfactorily. Among these are the original cables of 1858 and 1866.

The Commercial Cable Company has five Atlantic cables, the German Company two, the French Company two, and the Western Union two. Among the great cable systems which have developed in recent years in all parts of the world, are the following: The Commercial Pacific, which operates 10,000 miles of cable, extending from San Francisco to Honolulu, the Philippines, China, and Japan; the British Intercolonial System, covering 7,837 miles, and running from Vancouver to New Zealand and Australasia; the Central and South American Telegraph Company, which has 7,498 miles of cable, from New York to Cuba, to Colon, and down the west coast of South America; the Eastern Telegraph Company covers 41,000 miles, from England to Portugal, up the Mediterranean to Egypt, Aden, the Red Sea, and across the Indian Ocean to Bombay.

Other companies, the number of miles, and the territory covered, are: The Eastern Extension and Australasian System, 21,000 miles, from Madras, Singapore, the Dutch East Indies, China and Japan; the Eastern and South African Telegraph Company, 10,500 miles, from Aden, down the east coast of Africa to Natal and Cape Town; the Great Northern Company (Danish), 8,000 miles, connecting Norway, Sweden, and the Baltic Sea; the Western Telegraph Company, 18,765 miles, from Spain to Madeira, the Cape Verd Islands, Brazil and Argentine.

Cables of today are far different from those with which Mr. Field made his experiments. The 1858 cable consisted of a core of seven copper wires, weighing altogether 107 pounds per nautical mile, and insulated with three coatings of gutta-percha, weighing 261 pounds per nautical mile. The core was covered with hemp saturated with a mixture of Norwegian tar, pitch, linseed oil, and wax, and sheathed with 18 strands, each containing seven iron wires.

THE MODERN CABLE.

The modern types of cable are constructed in this way: The core consists of a central copper wire surrounded by strips of copper, weighing from 500 to 600 pounds per nautical mile, and insulated with three or more coatings of gutta-percha, weighing from 300 to 400 pounds per nautical mile. The outer sheathing varies according to the depth and nature of the bottom, and contains from 12 to 18 galvanized iron or steel wires. These cables vary in size and cost. The deep sea cable is about an inch in diameter, the intermediate type 1¾ inches, and the shore, or rock cable, 2¾ inches.

Notwithstanding improved methods of constructing cables, all companies are obliged to maintain repair ships. There are 53 of these ships always ready for action at a moment's notice. Cables are damaged usually by chafing over rocky bottoms, and sometimes they are broken by ships' anchors. An injury which bares the conductor even slightly, and allows the water to reach it, will end the usefulness of the cable for the time being. The first step then is to locate the break. A conductor offers a certain amount of resistance to the passage of an electric current. Apparatus has been devised for measuring the amount of this resistance. The unit of resistance is called an ohm. Resistance ceases at the point where the conductor makes considerable contact with the water; therefore, if, when measuring to locate a break, the apparatus indicates a resistance of 900 ohms, the break, according to the cable experts, is about 300 miles from the shore. With this information, the captain of the repairing ship can determine by his charts the course of the cable, the latitude and longitude in which the break has occurred and can set out at once.

When the ship has arrived at a point near the broken cable, a grapnel is dropped, and the cable is hooked. The ends are brought together on the deck, and joined by the electricians on board. One of the finest of these repairing ships is the Mackay-Bennett. S. S. Dickenson, general superintendent of the Commercial Cable Company, describes the ship as follows:

"She was built of steel, at Govan, on the Clyde, in 1883, at a cost of $320,000. She is propelled by two twin screws driven by two independent sets of engines. Her speed is 12 knots an hour; and she carries 385 nautical miles of submarine cable. She is fitted with all the modern machinery for grappling, picking up, and paying out cable. She is lighted throughout by electricity, including electric searchlights, so that operations can be carried on during the night."

It is generally supposed that all cable messages are received by means of flashes of light, but that system has been almost abandoned. When the Commercial Cable Company was established in 1884, it adopted the recording system, invented by Sir William Thomson. The instrument was complicated, and at first great difficulty was found in keeping it in good working condition, as it was to a great extent dependent on the weather. Great improvements have been made since then, and now the instrument is regarded as thoroughly reliable. Its principal parts are a light rectangular coil of silk-covered wire, and a powerful magnet. The coil is suspended between the poles of the magnet, and when excited by the electric current swings on an axis. Its movements are recorded on a paper ribbon, drawn at a uniform speed before a glass siphon, no thicker than a hair, which conducts a stream of ink to the ribbon. A speed of 250 to 300 letters a minute is constantly maintained.

RATES DECREASING.

Transatlantic cable rates, about which there have been so many complaints, have steadily decreased since the first cable was laid. Many persons who complain of the 25-cents-a-word rate of the present for transatlantic cablegrams may be surprised to learn that, when the first cable was opened for business in 1866, the rate was $5 a word. Later in the same year the rate was cut in half. In 1868, the rate was about $1 50 a word, and in 1869, $1 a word. In 1880, the cost of Atlantic cabling came down to 50 cents a word, and it was thought that rock bottom had been reached.

When the Commercial Cable Company was established, in 1884, however, it began business with a 40 cent rate. The other Atlantic companies united against the Commercial, and a big rate war ensued. They made a reduction to twelve cents a word, but this did not last long, and, when normal conditions returned, the Commercial Company sustained its 25-cent rate.

A brief sketch of the man who united the old world and the new by submarine telegraph, and made it possible to communicate with London, and receive a reply within five minutes, may be interesting in conclusion. Cyrus W. Field was born in Stockbridge, Mass., in 1819, and was the son of the Rev. Dr. David Dudley Field.

He came to New York when he was 16 years old to seek his fortune. He brought with him $8 given to him by his father. He was first employed as an errand boy in the store of A. T. Stewart, which was then the greatest mercantile establishment in New York, and received for his services the first year $50, and the second year $100. He paid $2 a week for his board in a house in Murray street, near Greenwich. His elder brother, David Dudley Field, lent him sufficient money to pay his board, but it was all repaid with interest before he was 21 years old.

While he was employed as a clerk at Stewart's, Cyrus studied bookkeeping, and, in 1838, he decided to go to Lee, Mass., to become bookkeeper for his brother, Matthew D. Field, a paper manufacturer. There he learned all about the paper business, and was often sent to Boston, Philadelphia, Washington, and New York. In 1840 he went into business for himself as a manufacturer of paper, and later became a partner in the firm of Root & Co., in Maiden Lane. Root & Co. failed, and the firm of Cyrus W. Field & Co., with offices in Cliff street, was formed.

He was successful in business, and in 1853 he retired temporarily and spent several months in South American travel. In 1854 he returned to New York, and became interested in the proposed submarine cable, with results described above. After his Atlantic cables were in operation he gave his attention to laying cables between Europe, India, China, Australia, the West Indies, and South America. Later he was the head of the movement to construct elevated railroads in New York City. In all his projects he was assisted by his brother, David Dudley Field, an eminent jurist. His brother went with him to Newfoundland when he sought a charter for laying the American end of the cable there, and was his adviser in legal matters connected with his great enterprises.

In 1869, Mr. Field was the representative of the New York Chamber of Commerce at the opening of the Suez Canal. He made a trip around the world in 1880, and afterwards settled down on his estate at Ardsley, Irvington-on-Hudson, where he died July 12, 1892.

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HOODS WORN IN OLD LONDON

WOMEN USE THEM WHILE TRAVELLING AND EVEN IN RESTAURANTS.

Milliners in London are going in for a new branch of business—they are making hoods. Whether the wearing of hoods will ever become at all general remains to be seen, but they are having a fair trial, according to the correspondent of the Millinery Trade Review. The specimens shown are very dainty, and not at all unbecoming.

The prettiest are certainly those shaped like a friar's cowl, and they are also the most convenient, as they roll up small and can be tucked away into the pocket of a theatre wrap or stowed away in a travelling bag.

Those run in with whalebone are more cumbersome, and this setting out from the face does not improve their appearance much, if at all. Both kinds are made of soft taffeta lined with satin and trimmed about the front and around the neck with ruffles of lace. Sometimes they are bordered with small flowers, which is a mistaken notion; a few knots of ribbon and the lace are all that is necessary.

Hoods are worn only when going to and from the theatre or other evening entertainment, and when travelling. Some women have taken to them most kindly, and will immediately doff their hats and put on hoods on boarding a railway car, retaining them even when lunching or dining in the restaurant.

THE DECAY OF HUMAN TEETH

A DOCTOR'S LESSON IN MOUTH HYGIENE.

The dog and the cast have no need of tooth brushes, dentifrice, or dentist. These animals eat food which is natural to them and use their teeth in such a way as to keep them in health. Human beings, at least most of the civilized races, have adopted an unnatural diet, and have lost the art of chewing. Horace Fletcher only recently discovered this lost art, and by preaching and dissertation is laboring most earnestly to teach his fellows how to masticate and insalivate their food.

Mastication is almost a panacea for many mouth and stomach ills. The proper preparation of the food in the mouth insures good gastric digestion, and at the same time polishes the teeth and insures against decay.

Decayed teeth are not merely the sign of local infirmity, however. The decay of the teeth is the result of the action of germs upon these hard structures. When the fluids of the mouth are in a normal condition, they act as perfect preservatives of the teeth. They are antiseptic and germicidal. They will not permit the growth of the germs which cause dental cavities. It is only when the blood, from which the mouth secretions are formed, becomes deteriorated that the secretions are vitiated, and decay of the teeth is permitted.

So the fact of decayed or lost teeth is of general rather than mere local significance. The meaning is that the blood, and hence the whole body, is deteriorated. The prevalence of decayed teeth in the present generation means racial decay. The same thing that causes dental decay renders the bones less resistant to disease, and so we see a notable increase in bone tuberculosis and other bone maladies. This, too, is a biological sign of decay.

Mouth hygiene, then, involves much more than the mere cleansing of the teeth before and after meals. It requires attention to all measures which affect the blood and general health. Proper diet, thorough mastication, the out-of-door life, care of the skin, proper breathing—these are all matters of importance.

The free use of cane sugar encourages decay of the teeth, not because it generates acids in the mouth, but because the use of carbohydrates in this form, instead of in the form of cereals, robs the body of the salts necessary for the proper nourishment of the bones and teeth. The use of flesh meats as a source of proteid likewise deprives the body of the lime salts which are found abundantly associated with vegetable proteids, but which are lacking in animal proteids. This important fact was pointed out last year in an important paper by Professor Sherman, of Columbia University. Each grain of wheat or corn contains every element which a whole animal contains, lean meat, fat, bones, and all; but the lean meat is almost wholly lacking in salts.

All these scientific facts point clearly to the importance of a natural dietary eaten in proper quantity, and with thorough mastication.—From an article in Good Health.

The average missionary contribution for each pupil in the Sunday schools is higher in the Episcopal denomination than any other.

The total area sown to gingelly in the Madras presidency, India, is 535,000 acres, the estimated yield for which is 44,498 tons. This is the commercial name for sesame, from which the value of oil produced annually is about $3,993,014.