

THE STORY OF ATLANTIC TELEGRAPHY.



EVERY year the submarine telegraph between America and Europe becomes more important; but though the history of the first attempt to carry a cable under the Atlantic—the cable which “spoke, throbbled, and was silent”—is well known, there are few even of those who use the wires

often who know the extent of the Atlantic telegraph system, its growing use, and the vast capital therein invested. For years that traffic has been growing; and there have been several new companies formed which have added cables to the number laid, and thus enlarged the working capacity of the under-sea cables. Indeed, if the value of the shares is any test, the capacity of the cables for working is above that of the remunerative demand for their use.

It is thirty years since the Colonial Government of Newfoundland offered a guarantee to a company undertaking to lay a telegraph cable from Ireland to that colony. After elaborate experiments, a company was formed, a cable was made and laid. The cable, 2,500 miles long, enclosed 350,000 miles of wire, and “taxed the wire-drawers of the United Kingdom to produce it in time.” Our Government lent a war-vessel, the *Agamemnon*, to take out half the cable, and the *Niagara* was lent for a like purpose by the United States Government. In August, 1857, the attempt began, and on the 11th of the month the cable snapped 350 miles from Ireland, and fell to the bottom of the sea. In July of the following year a more successful attempt was made, and in August, 1858, the telegraph cable was laid. On the 20th of the month commercial news began to be sent; on the 22nd Queen Victoria complimented President Buchanan and the United States “upon the completion of this great international work,” and Mr. Buchanan suitably responded to the first royal telegram that had passed under the Atlantic waves. But on the 3rd of September the cable ceased to “speak,” and for a time there was an interruption to the communication under the waves. But neither that disappointment, nor the loss of a vast sum of money, daunted those who desired to thus annihilate distance; and the proof that this is so is seen in the fact that there are now five companies who have cables laid for use between Europe and America! It may be of interest to state now the names of these, the number of their cables, and to show the extent of the capital sunk therein.

Early pioneer companies, the Anglo-American, the French Atlantic, and Newfoundland Telegraph Companies, amalgamated in 1873, and formed the Anglo-American Telegraph Company, the oldest and the largest of the cable companies whose lines are under the Atlantic. Its capital is £7,000,000, and it has

now four cables working. Next to it comes the Direct United States Cable Company, with a capital of £1,314,000, which works one cable, and which, in its re-organised form, dates back to 1877. Then follows what is called the French Telegraph Company, and the two latest, the “Gould” and the “Bennett-Mackay” Cable Companies, the first of the three having one cable, and the two latter two each.

Turning from these dull records of fact, it may be added that the ten cables have had their workable facilities much increased by the adoption, in degree, of what is called the duplex system, by which a cable may be used for the transmission of messages in two directions at the same time. It is this, as well as the increase in the number of cables of late years, which has enabled so much more work to be done, lessened the period of waiting of telegrams for their “turn” at certain busy periods of the day, and tended towards the reduction of the cost of messages. That reduction of cost has been very irregular; usually the commencement of a new line has been the signal for a competition, during which the rate has been greatly lowered. But the truth of Robert Stephenson’s maxim has been proved: “where combination is possible, competition is impossible” long, and in the end the competitions have resulted in combinations, and in a slight increase of the rate for the messages. Thus that rate has fluctuated: it has been as high as three shillings per word and as low as sixpence per word in one year, and at the time of writing is two shillings per word.

The comparatively high charge stimulates the use of “code” messages—messages in which words are employed, having a meaning agreed upon between the sender and the receiver, by which a considerable saving is brought about, and to some extent secrecy secured in the message. Here is one such message in code: “Syrian, Abingdate, hull, Maybloom, haws-piece, gustulus”—a rather startling-looking message, which costs for the message twelve shillings for the six words (apart from the address), but translated with the aid of the code, the six words are expanded into a message about provisions and their prices to the extent of a score or two of words.

The speed of the Atlantic telegraph is varied: the mere transmission itself is a short act—say five minutes from end to end—but the occurrence of a large part of the traffic in a few hours of the day makes delay inevitable at that period, and adds to the length of the time from despatch to delivery of the message. As to the extent of the messages that pass over the Atlantic cables, it is difficult to speak with certainty, but in the period when the cost of telegraphing was least—when the tariff was sixpence per word—the highest number of words transmitted was 1,100,000 per month. A short time previously a new cable had been laid, connected with the shore ends of an old cable, and in length 1,506 knots deep sea between

Valentia (Ireland) and Heart's Content (Newfoundland), and 310 knots between Newfoundland and Cape Breton, and for this the total expenditure was £533,250; so that with the enlarging experience time gives, and the reduction in cost, half a million sterling may be roughly placed as the cost of each cable between the two sides of the Atlantic. The monetary results to the owners of the cables cannot be said to be extravagant. The receipts from the working of the associated cables are "pooled," and divided amongst the companies in proportions varying according to the number of cables in working order each possesses. Taking the largest company, its traffic receipts in six months were £225,000; and the cost of working, salaries, rent, maintenance of land lines, use of patents, office expenses, &c., were £36,500 in that time; but new buildings, provision for renewal, &c., claimed considerable sums, and in the end the holders of ordinary stock received only £1 10s. interest on £100 for the six months—three per cent. per annum. For this, offices are kept up in London and elsewhere; stations in Newfoundland, Ireland, France, and other countries; a staff specially experienced is provided, and a magnificent collection of electrical instruments is in use; whilst there is gradually growing up a greater knowledge of the length of "life" of cables, and of the conditions and the rates at which they can be most efficiently and economically worked.

Atlantic telegraphy, indeed, is still young and still

undeveloped. One cable—a patriarch, from Brest to St. Pierre—is fifteen years old, but most of those we have named are comparatively young. Their working capacity under present conditions is known, but it is not known how soon these conditions may be altered, or at what rate messages may be sent. And as yet only the fringe of trans-Atlantic telegraphy has been touched. With few and short exceptions, the rates for messages have been heavy, and thus the extent of the work is minimised; but with the enlargement of the number of cables, and with a growing competition, lower rates will become current, and every year the growth of interest, of business, and of friendly relationship between the two great communities at each end of the wires, will increase the number of the messages of business, of news, of social life.

The Poet-Laureate has spoken of the "march of mind in the steamship," but it is yet more apparent in the telegraph, for whilst the steamship has, at vast cost and with enormous exertion, brought down the length of the passage from England to America to one week, the under-ocean wires are in seconds carrying momentous messages, and, in the strong words of Lowell, along them "tremble the joys, sorrows, wrongs, triumphs, hopes, and despairs" of myriads of men and women everywhere. This is now the outcome of the work of thirty years ago, and of the efforts of the Penders, the Grimstones, the Fields, and others who have developed the work.

THE GATHERER.

A Boot-Label.

Our engraving illustrates a household convenience recently introduced. It is designed to insure the calling of travellers in hotels and residences at the proper time in the morning. At present the custom is for "Boots" to chalk the hour on the boot-soles of the guest who wishes to be roused; but this plan sometimes leads to highly inconvenient mistakes. The new boot-labels are hung in the coffee-room and bed-rooms of an hotel, so that when the guest takes off his boots he may write the hour of his morning call on the label and affix the latter to his boots.



One form of the labels is a clock-face, which can be set to the hour; another is fitted with cards, which can be shifted as in a calendar; a third (which is shown in our illustration) has provision for ordering a bath or breakfast, &c.

An Electric Parcels Post.

At the Royal Aquarium, Westminster, there has been on view for some months an interesting variety of the electric railway, adapted for conveying parcels. There is nothing novel in the system except, perhaps, the rails, which are placed one directly over the other, and the carriage runs between. The wheels of the carriage, placed one in front of the other, are deeply grooved to clutch the rails and prevent the car leaving the track, no matter how sharp the curve or high the speed. The motion is, of course, imparted to the wheels by a dynamo or electric motor carried by the car, and the dynamo is driven by an electric current conducted to it by the rails, and in this case supplied by a primary battery. Mr. Danchell's railway is an interesting experiment, and we hear that a larger trial will be made of it ere long.

"Squaring the Circle."

Mr. C. E. Parker Rhodes has brought out a simple contrivance for facilitating certain geometrical calculations. It consists of a shallow square trough, an adjustable "right-angle," and a quantity of small shot. To find approximately the "square" of a given circle, the latter is cut in some hard material, and the