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THE TELEGRAPH PLATEAU OF THE ATLANTIC.

VALENTIA BAY, IRELAND.

118-3

We have spoken of the success which has thus far attended this great enterprise, but there is one remarkable fact connected with it which is deserving of particular attention. When the subject was first proposed it was feared that the inequalities which were supposed to exist in the bed of the ocean, between Ireland and Newfoundland, would present an insurmountable barrier to the successful completion of the project; but it has been proved by Lieut. Maury that there are no such inequalities in this part of the Atlantic. In the summer of 1853, and in the fall of 1856, Lieut. Berryman was employed in making deep sea soundings along the proposed route. These soundings proved the existence of this plateau, which appears to have been placed there especially for the purpose of holding a submarine telegraph. From the subjoined engraving it will be seen that the greatest depth does not exceed two thousand and eighty fathoms. A cable laid across from Newfoundland to Ireland would pass to the north of the Grand Banks, and rest on the plateau, and at a depth where the waters of the sea, judging from the nature of the bottom when brought to the surface, are as quiet and as completely at rest as the bottom of a mill-pond. There seems to be no perceptible currents and no abrading agents at work on the surface of the plateau. Lieut. Berryman brought up with the sounding apparatus specimens of the bottom, which, when examined with the microscope, were found to consist of shells so minute as not to be perceptible to the eye. These little shells at once suggested the fact that there are currents at the bottom of the sea from which they are taken; that the spot where they were found was their burial place, and that after having lived and died on the surface they had sunk gradually to the bottom, where they had lain undisturbed by currents; for if the plateau were swept by currents they would, doubtless, have been abraded and mingled with the other microscopic remains which lie at the bottom of the ocean, such as sand, gravel and other matter; but not a particle of sand or gravel was found among them.

In the profile of the soundings taken along the plateau every apparent depth is exaggerated ten fold, in order to enable the eye to judge of the effect. The undulating line represents the surface of the plateau, the different depths being marked by fathoms, which are represented by the figures between the level of the Atlantic and the bed of the plateau. The soundings, Lieut. Berryman says in his report to ex-Secretary Dobbin, were made at intervals of thirty, forty, sixty and one hundred miles, all attended with complete success, but frequently involving many hours, both night and day, of great suspense and hard work, losing sometimes two or three thousand fathoms of line, sounding apparatus and all. There were no currents near the bottom to affect the soundings, and frequently the slack line would be coiled or knicked upon it, showing plainly that it reached the bottom without the assistance of the lead, determining the important fact that a cable or wire of the lightest kind would reach the bed of the ocean.

LEVEL OF THE ATLANTIC (SOUNDING) OCEAN.

PROFILE OF THE BOTTOM OF THE ATLANTIC BETWEEN VALENTIA BAY, IRELAND, AND ST. JOHN'S, NEWFOUNDLAND, AS SOUNDING BY THE U. S. STEAMER RELIANT, CAPT. O. H. BERRYMAN.

EFFECTS OF THE SUCCESS OF THE SUB-MARINE TELEGRAPH.

The first fact that presents itself, in considering the effects which must result from the success of this enterprise, is the annihilation of both space and time between the Old and the New Worlds. One of the principal objections urged against its practicability was the difficulty in procuring a battery sufficiently strong to transmit a pulsation across the Atlantic through a simple conductor. It was, however, satisfactorily proved by Professor Morse

that it not only could be done, but that a strong electric current could transmit a dot or character a distance of two thousand miles in two seconds. Other electricians said it could not be done in less than from four to six seconds, but the fact that it could be accomplished was fully established. The statement of a few facts will show the wonderful effect which will be produced by the successful laying of this cable. The London Exchange closes at three o'clock, and as the difference in time between that city and New York is four hours and forty-five minutes, we will receive the report of the price of Consols at eleven o'clock in the morning, in time for our operators in Wall street. The movements in the London and New York money markets will therefore appear in the evening editions of the New York Herald, and on the same day on which they may take place. The British Parliament sometimes sits as late as one o'clock, and their sessions are occasionally prolonged till two in the morning, but the result of their deliberations will reach us about ten o'clock of the preceding evening, time enough to be published in the Herald of the next day, simultaneously with the report in the London Times. Then, again, our great mercantile firms can send their orders through it to different parts of Europe and countermand them with the same rapidity should they find it their interest to do so. It is hardly possible to calculate the effect of this stupendous undertaking, and when accomplished there cannot be a doubt of its success in a pecuniary point of view. When it is considered that it will be connected with the various land lines on both sides of the Atlantic, now extending thirty-three thousand miles in Europe and forty-two thousand in the United States, and that it will be the only means of communication between them, it would seem to be inadequate to the demands that will be made upon it. Such is the opinion of some who have had long experience in telegraphing, and who predict that before five years elapse two submarine cables will be required instead of one.

MORE SUBMARINE CABLES PROPOSED.

An association was quite recently organized in England under the title of the European and American Telegraph Company, which proposes to establish a direct independent line of telegraph between Europe and America. It is their intention, if practicable, to lay down a cable from the south of England, and another from or near the port of Bordeaux, in the south of France, to Cape Finisterre, on the coast of Spain. Thence the cable will extend to Oporto, or some more convenient spot on the Portuguese coast, whence it will be laid to Flores, one the Azores, and from that point it will proceed direct to Cape Cod, or if possible still nearer to Boston. We have not heard anything, however, of the discovery of a plateau along this route; but the bed of the ocean near the Azores is known to be of a volcanic nature, and has, we believe, some great and sudden declivities, which might materially interfere with the laying of a cable.

The following are the approximate distances between the several points proposed to be connected:—

| | Nautical Miles. |
|--|-----------------|
| 1. Lizard to Cape Finisterre..... | 450 |
| 2. Bordeaux to Cape Finisterre..... | 360 |
| 3. Cape Finisterre to Cape Rocca..... | 270 |
| 4. Cape Rocca to San Miguel..... | 280 |
| 5. San Miguel to Flores..... | 300 |
| 6. Flores to Cape Cod (United States)..... | 1,800 |

Total.....3,990

When the cable from the Island of Sardinia to Algeria shall have been successfully laid, a land line will be run to the Isthmus of Suez, from which point it will be extended in as direct a course as possible over the intervening portion of Asia to the most Southern extremity of the British East India possessions. From this point it will be carried across the Islands of the Eastern Archipelago to Australia, bringing this—one of the most distant British colonies—into almost immediate communication with the seat of government at London. The greatest extent of water which will have to be crossed between the islands in this ocean will not exceed four hundred miles. It may be twenty, perhaps fifty years, before this can be accomplished, but, who looking back at the great progress which has been made in science during the last half century, will say that the project is a visionary one, or that the great globe may not eventually be girdled by an electric belt along which thought will fly with the speed of the lightning, or, indeed, with the rapidity of thought itself?

strength to render it less liable to accident from the fouling of anchors or the effects of currents. As a proof of the durability of such a cable we may here state that we saw a specimen of that which connects Dover and Calais, and which after a submersion of six years was as perfect as when first put down. Accidents from the grounding of icebergs at the Newfoundland terminus will be rendered impossible by the laying and landing of the cable in a harbor perfectly land locked, into which no icebergs can enter and where the water varies in depth from two hundred to two hundred and fifty fathoms.

TOTAL LENGTH OF SUB-MARINE CABLES ALREADY LAID DOWN.

The following table gives the length of each of the submarine cables which have been laid in different parts of the world since the first attempt to establish sub-aqueous communication between Castle Garden and Governor's Island:—

| | Miles. |
|---|---------|
| From Dover to Calais..... | 21 |
| From Howth to Holyhead..... | 65 |
| Between Ireland and Scotland..... | 20 |
| From England to Holland..... | 115 |
| From Dover to Ostend..... | 60 |
| From Balaklava to Varna, Black Sea..... | 374 |
| Between Sardinia, on the main land, and Corsica..... | 60 |
| Between Corsica and the Island of Sardinia..... | 6 |
| Across the Gulf of St. Lawrence, from Cape Breton to Newfoundland..... | 74 |
| Across the Straits of Northumberland between Cape Tormentine and Prince Edward's Island..... | 10 1/2 |
| Total miles now laid..... | 806 1/2 |
| When the Atlantic cable shall have been laid this total to near will be increased to twenty-five hundred miles. | |

INFUSORIA OF THE TELEGRAPH PLATEAU.

The specimens to which we have alluded as having been obtained from the bed of the ocean by the soundings of Commander Berryman, and of which we present engravings as they appeared through a highly magnifying microscope, possess a peculiar interest in themselves. Among them foraminifera of various kinds are abundant, and there are some good specimens of diatomacea in the collection. The diatomacea is regarded by most naturalists as belonging to a very minute class of sea weeds. The plant consists of a single cell, is indestructible by fire, and from its varied and beautiful markings is highly prized by microscopists. Some of the species form the best tests of the quality of a good microscope. In some cases, when growing, they are furnished with a gelatinous stalk, which supports several

frustules or pieces of them. They will be readily recognized in the engravings, from the fact of their growing in clusters. The foraminifera is so called from its having a large number of holes or little openings, and is of different shapes and sizes. It may be generally interesting to know that the foraminifera is classed by naturalists among animals, but at the very lowest point of the scale of existence.

HIGHLY MAGNIFIED INFUSORIA TAKEN FROM THE TELEGRAPH PLATEAU.



These engravings represent the infusoria magnified three hundred times their natural size, and are so infinitesimal as to be the merest mites on the surface of a microscopic glass. Notwithstanding they are so perfect in form, so delicate in construction, and so minute in size, the bed of the plateau is so quiet and undisturbed from the action of the ocean, that scarcely any of them, comparatively speaking, are injured or broken by abrasion or attrition. They will, indeed, form a sort of bed down for the cable to rest upon. Incredible as this may appear, it is nevertheless true in every particular.