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THE SCIENTIFIC AMERICAN SUPPLEMENT

No. 396,

For the Week ending August 4, 1883.

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A BRAVE LIFE GONE OUT.

Captain Matthew Webb, the famous English swimmer, was drowned in the Niagara Rapids, July 25, in an attempt to float "the angriest bit of water in the world," as he styled it. His attempt was not made wholly for notoriety, for no extensive advertising was done, and no means taken to secure a large number of spectators. It was not made for money. Probably less than 200 persons saw this brave man go to his death. But he had great confidence in his powers of endurance, for he had swum the English Channel from Dover to Calais, a swim of nearly twenty-two hours; he saved a sailor by jumping overboard in the mid-Atlantic in a storm, and was the recipient of a gold medal from the Royal Humane Society, and of other testimonials, for his skill and bravery. He came to this country in 1879, and besides giving exhibitions of his own skill, gave lessons in swimming. He was only 45 years old when the remorseless waters drew him out of mortal sight.

Some time before the fatal attempt he stated that he felt himself strong enough and skilled enough to swim the Niagara Rapids and get through alive, in defiance of the stories told by the inhabitants of the adjacent localities as to the danger of these turbulent waters. He even described in detail his plan of avoiding the Scylla and Charybdis of rocks, and the dress he would wear. He had calculated on the methods he would adopt in buoying himself, the use of "breast strokes" and "overhand strokes," all his plans being well thought out beforehand, and his failure should be attributed to his lack of knowledge of the awful hell of waters into which he ventured, which outvie even Poe's horrible description of the "Descent into the Maelström."

Only three persons can boast of having shot the rapids, and they did it in a steam vessel, the Maid of the Mist, in 1861, under circumstances of such extreme peril as may best be understood by the fact that she came out of the ordeal with loss of smokestack and with such other injuries as made her appear like a wreck when she landed on the other shore, miles below her starting point. And this success was made by a boat built to withstand the surges below the falls, and specially lightened for the shoot, with a one hundred horse power engine to propel her. If she barely came out of the test, battered and abused by the terrible waters, it is no wonder that a brave man lost his life with only his own unaided physical stamina and mental courage to back him.

COMPLETION OF THE GREAT LYMAN-HASKELL GUN.

The twenty-five ton gun, twenty-five feet long, which has been in process of manufacture during the year past by the Reading, Pa., Iron Company, is at last completed, and is a splendid piece of workmanship. This remarkable weapon has the following peculiarities of construction:

Hanging from the under after part of the gun are four large protuberances arranged in a line, each something like a cow's bag. These protuberances contain pockets for holding powder, and they communicate with the bore of the gun. The latter is charged at the breech with eighteen pounds of powder, against which the projectile rests in the ordinary manner; each of the pockets is intended to contain twenty-eight pounds of powder.

The firing of the breech charge starts the projectile, which is successively accelerated, on passing the several pockets, by the firing of the powder charges contained in them, which are set off by the flame within the cannon. In this way five successive charges are made to act against the projectile, which leaves the gun with a tremendous velocity. It is expected that this cannon will revolutionize the art of gunnery; it is believed that it will carry its ball twelve or fifteen miles, and go through iron plates two feet in thickness. The new gun is now on its way to Sandy Hook, N.Y., where it is soon to be tested before a board of army and navy officers, under a special Congressional appropriation. A full, illustrated account of this novel invention was published in the SCIENTIFIC AMERICAN of January 28, 1882.

THE TELEPHONE INTERFERENCE CASE DECIDED.

The Examiner of Interferences at the Patent Office, Mr. J. B. Church, has lately rendered a decision in the long contested telephone case, in which the parties interested were Bell, Gray, Edison, McDonough, Dolbear, Boelker, Blake, Irwin, and Richmond. We understand that this decision disposes of some eleven cases in all, in which the above parties were represented. These cases have been pending before the Patent Office since 1878, and were argued before the Examiner about a year and half ago.

It has been necessary for the Examiner to go over a vast amount of testimony, and it is understood that he has performed the duty with greatest care; his decision is stated to cover nearly seven hundred pages of manuscript.

Priority of invention is awarded to Bell for the art by which oral conversation or sounds of any description can be telegraphically transmitted; also for the improvement in the art of transmitting vocal sounds or spoken words telegraphically; also for the acoustic telegraph, including sound producers as well as reproducers on armature plate, the electro-magnet for the same, and a closed circuit passing from the helix of such electro-magnet to the source of undulatory electric energy; also for the telephonic transmitters and the combination in one circuit of two or more disks or diaphragms; also for the combination for rendering audible acoustic vibrations: also for the combination in an acoustic telegraph of an electro-magnet and a polarized armature, and the combination in an acoustic telegraph of an armature plate polarized by induction, a resonant tube, and an electro-magnet and circuit connections.

Priority of invention is awarded to Edison, although he did not claim it, for the transmitter, consisting of the combination in an electric circuit of a diaphragm and a liquid or equivalent substance of high resistance, whereby the vibrations of the diaphragm cause variations in the resistance of the electric current; also for the combination in a telegraph instrument operated by sound of two or more electrodes placed in an electrolytic liquid, and operating to increase and decrease the resistance of the electric circuit by the movement derived from the diaphragm; also for a spring forming or carrying one electrode, and constantly pressing against the other electrode and the diaphragm to maintain the required initial pressure between the electrodes and yield to the movements of the diaphragm.

Priority of invention for "a telephone receiver, consisting of the combination in an electric circuit of a magnet and a diaphragm supported and arranged in close proximity thereto, whereby sounds thrown upon the line may be reproduced accurately as to pitch and quality," is awarded to McDonough.

OLD BUILDING MATERIAL.

An extensive trade in second hand building material has been carried on uninterruptedly in this city for fifty years, and is largely supported by builders and joiners. The stone and brick of an old building is used in the construction of a new one, the lime-whitened bricks making the inside of the outer walls and the partitions, and the stone going into the foundations. But it is not generally known that the inside woodwork is used again, frequently without radical alteration. Many builders prefer this old timber because it is thoroughly seasoned, having been defended from the weather and been subjected to the influences of a measurably even temperature for years. The richer woods which are admired for their color acquire mellower tones by age and become more valuable as the years pass. Everybody knows that furniture of mahogany and rosewood that has outlived several generations is much handsomer than that made from new wood. But it has an added value as mere material. An article made from the old wood will retain its integrity in all its joints; its shrinking days are over. For the same reason the timbering, waiuscoting, and flooring of old buildings has an added value, although its selling price is less than that of new material.

THE RELATIONS OF PATENT EXPERTS TO THE COURTS.

When a case involving scientific principles comes up in the courts the custom is for each side to call to their assistance scientific experts. These are men who, on account of education and profession, are admitted to possess a peculiarly full knowledge of the scientific points involved in the issue.

They occupy an anomalous position. They are summoned nominally as *amici curiæ*, or friends of the court, to assist in its deliberations, and give it information in the special knowledge required to dispose of the questions that come before it. This assumes that they are quite disinterested and indifferent to the ultimate issue. Yet each side engages its own expert, and each of these experts takes as favorable a view as possible of his own side and runs down the other as much as possible. Although their compensation does not depend on the final decision that is reached, if they were to act as judges and not give their own side the benefit of all doubts, their occupation would soon be gone. The fact that they are in some sense advocates is recognized by the court. The fact that they are retained by one or the other side to testify in its favor is admitted.

Because it is always possible in this special class of suit to engage experts to testify on either side, a certain degree of distrust for their opinions is often expressed. The great truth is overlooked, that in not one case out of a hundred are the principles so clear that something is not to be said on both sides. Yet the complaint is continually made that the expert is too much the advocate.

Among lawyers who practice in patent suits different views of this subject obtain. Some say that they do not believe in experts. They would prefer to conduct their suits without them. The general custom is all that makes them retain them. These lawyers will often be found to be among the best of their class. They will have so good a knowledge of the principles of science, as to quickly grasp the mechanical points of a case. They could act as experts themselves, but custom requires that they should have some witness, one obliged to tell the whole truth, as a supporter of their views. Such a supporter has been found to have great weight with the court, and to be of much influence in controlling its decision.

Some lawyers propose another system. They say that the expert should be engaged to present the views of the counsel to the court. They should not be witnesses. Their statements should be an exposition in understandable and correct form of the views of the counsel. This statement should be given as a one-sided view, and should not profess to be disinterested. Finally, it should not be given under oath. This certainly is meeting the difficulty, and justifies the expert in the most advanced position of advocate which he may be inclined to assume. Were his position recognized as this one he would still remain to a certain extent an *amicus curiæ*, while the fact of his being an advocate would be recognized as proper and right. At present this is practically