

# SCIENCE

FRIDAY, NOVEMBER 4, 1887.

THE NUMBER OF PERSONS who have been killed by explosions in mines during the past fifty years is 11,000, as stated by Mr. Ellis Lever in a recent number of the *London Times*. This number is, however, only a small proportion of those who have met their deaths by colliery accidents. The number of deaths through accidents of all kinds in mines since the Queen's accession is nearly six times greater, — 60,000, Mr. Lever says, — while 4,000,000 persons have been maimed or otherwise injured. Mr. Burt, M.P., an undoubted authority, states that the average number of those killed in mining operations is now 1,200 a year, and that 100,000 persons annually are injured in following the hazardous occupation of the miner. What are the causes which conduce to this terrible loss of human life? Mr. Lever says the want of a better and safer light is mainly responsible. The Royal Commission on Accidents in Mines has condemned as unsafe the lamps of Davy, Clancy, and Stephenson. The House of Commons confirmed the conclusions arrived at by the royal commissioners, and government inspectors of mines are now advocating and hoping for the immediate and universal introduction of the electric light into coal-mines. This state of affairs leads the English *Electrical Review* to say that it is to the electric light that the miner must look for emancipation from many of the horrible dangers to which he is subject. There are many forms of electric lamps now competing for the favor of miners and mine inspectors, and some of them possess undoubted advantages over the older types of safety-lamps. But there are also, in most of these, serious drawbacks which prevent their speedy introduction to mine uses. Weight, complication, and cost are among the principal disadvantages; and it behooves electricians to give their utmost thought to the task of overcoming the difficulties which the peculiar needs of the miner present. We have it on the testimony of Sir Frederick Abel that very great progress has been made towards providing the miner with a thoroughly safe, sufficiently portable, and generally efficient self-contained electric lamp since the Royal Commission submitted its final report; but the same authority is of opinion that strenuous exertions are yet needed before the comparatively heavy first cost of electric lamps will be so greatly counterbalanced by their durability and simplicity in construction and maintenance as to afford hope of their being generally or even very extensively substituted for oil-lamps. So that it is evident that the electrician is, in this direction as in many others, still behind the needs of the age, and behind what is expected of him.

## AN EARLY MAP OF THE FAR WEST.

THE classic transcontinental expedition of Captains Lewis and Clarke, under instructions of President Jefferson to cross the plains and mountains to the Pacific Ocean, left the Mississippi on their venturesome journey, May 14, 1804. Their first winter encampment was made among the Mandan Indian villages, not far from the present site of the town of Bismarck. During the winter of 1804-05 their time was mainly occupied in preparation for the continuation of their journey westward. They were in frequent communication with the Indians, and received occasional visits from a few straggling French *voyageurs* and traders of the North-west Fur Company, who came from their headquarters in Canada as far as the Missouri. On the eve of the departure of the expedition, the following spring, Captain Lewis sent back a number of men with despatches, journals, and collections addressed to the government at Washington.

Among the articles forwarded was a map, prepared by Captain Lewis from all available data, of the country lying between the Mississippi River and the Pacific Ocean. The information obtained of the country to the westward of their winter quarters was for the most part derived from Indians more or less acquainted with the country near the head waters of the Missouri and Columbia.

In a letter of transmittal to President Jefferson, dated Fort Mandan, April 7, 1805, Captain Lewis says, "The map which has been forwarded to the secretary of war will give you the idea we entertain of the connection of these rivers, which has been formed from the corresponding testimony of a number of Indians who have visited that country, and who have been separately and carefully examined on that subject, and we therefore think it entitled to some degree of confidence." In a following paragraph, he adds, "You may therefore expect me to meet you at Montachello in September, 1806. On our return we shall probably pass down the Yellowstone River, which, from Indian information, waters one of the finest portions of this continent."

On Feb. 19, 1806, President Jefferson, in a message to Congress communicating the discoveries of Lewis, says, "During his stay among the Mandans, he had been able to lay down the Missouri, according to courses and distances taken on his passage up it, corrected by frequent observations of longitude and latitude; and to add to the actual survey of this portion of the river, a general map of the country between the Mississippi and Pacific, from the thirty-fourth to the fifty-fourth degrees of latitude. . . . Copies of this map are now presented to both houses of Congress."

After despatching the party for the return trip, the main body of the expedition crossed the mountains, wintered near the mouth of the Columbia, and, returning, reached St. Louis in September the following year.

As is well known, they brought back a large amount of most valuable geographical knowledge. In the map compiled by Captain Clarke, published in the authorized editions of the history of the expedition (Philadelphia and London, 1814), the main features of the country are in very many essential particulars different from the way they were originally represented on the preliminary map forwarded from Fort Mandan. The map was never ordered by Congress, and, so far as I can ascertain, was never published. It seems quite probable that after the return of the expedition means may have been taken to suppress so erroneous a production. At all events, no mention is made of this map in the published history of the expedition. In their journal they say, "At the same time that we took our departure, our barge, manned with seven soldiers, two Frenchmen, and Mr. Gravelines as pilot, sailed for the United States loaded with our presents and despatches."

To-day, however, the original drawing has considerable historic interest, as it gives the opinions of the highest authorities of the time upon the physical geography of the country and its inhabitants, and at the same time presents a clear idea of the value of the aid they received from Indian guides and others.

One of the copies of this map has been preserved in the Archives of the War Department, and through the courtesy of Gen. J. C. Duane, chief of engineers, I have been able to photograph it for reproduction.

The only public reference to this map which has come to my attention is a short editorial notice in the *Medical Repository*, New York, 1806. The journal was edited by Dr. Samuel Latham Mitchell, who was also a member of the House of Representatives. While in Congress, he served upon the Committee on Commerce and Manufactures, and in that capacity advocated all measures for the exploitation of the Louisiana Purchase. There is evidence to show that he was one of the pioneers in Congress in favor of the exploration of the Far West by the general government. A copy of the map accompanies this communication. It was reproduced for