

Translated for the Journal of the Franklin Institute.

Remarks on the Experiments made in 1848 and 1849, in the United States, by MR. S. C. WALKER and MR. O. M. MITCHEL, to determine the Velocity of Propagation of Electricity. By M. H. FIZEAU. (Extract.)

M. Gounelle and I presented to the Academy, at its session of 15th of April, 1850, a memoir on the velocity of propagation of electricity. Very extensive labors on the same subject were executed at the same time in the United States, by Messrs Walker and Mitchel. When we wrote our memoir, the first results of these researches were already known to us, but in too imperfect a way to render a detailed discussion possible. We could but mention them, and point out several causes of uncertainty which we saw in their experiments. New publications have given, in a pretty complete manner, the processes employed by the American observers, and the numerical results of their experiments. I present now, a detailed analysis of them, and it appears to me to be proved by this examination:

1st, That there existed in the modes of observation, several causes of constant or accidental errors, of which the authors had not taken account, and the effects of which are considerable, relative to the quantities which it is required to determine.

2nd, That the result of their observations was interpreted in a way contrary to the most probable theory of electric propagation.

3d, That the phenomena observed, are in no wise in contradiction with the velocity of propagation which we have deduced from our researches, which is 25,000 metrical leagues per second in iron wire.

4th, That this value may be deduced from the experiments given in the memoir of Mr. Mitchel.

5th, That the much less values given by the authors, and comprised between 12,000 and 5000 leagues per second, are not admissible.—*Comptes Rendus de l'Acad. des Sciences de Paris.* 13th Janvier, 1851.

*Statistics of Coal Gas Used in England.**

The manufacture and consumption of coal gas alone is a wonder, in a commercial point of view. In England, 6,000,000 tons of coals are annually employed for its manufacture; and from 12,000,000*l.* to 15,000,000*l.* expended in its production. In London alone, 500,000 tons are consumed, producing 4,500,000 cubic feet of gas, and 500,000 chaldrons of coke—125,000 chaldrons of which are consumed in heating the retorts, and the remainder sold as fuel. The length of mains in London is 1600 miles, and the capital employed 4,000,000*l.*

Gas Retorts of Clay.†

At the South Metropolitan Gas Works, in Old Kent road, there are now working two furnaces of retorts, with five in each, which have been uninterruptedly in action for 17 months. These retorts are made of fire-

* From the London Mining Journal, No. 806.

† From the London Mining Journal, No. 805.