

big saving will be effected in belt and oil bills compared with mechanical drive, and that the system can be operated with less attendance.

There should be no hesitation in installing electrical drive in cement mills, for it will prove its superiority over all other methods of driving by continuity of service and by the flexibility with which it can be operated, and it will also prove that the power bill will be just as small, if not smaller, when compared with all other methods of driving.

A PIONEER IN THE CANADIAN CEMENT INDUSTRY.*

On the eve of the first Canadian Cement Convention I think it might be of interest to many to make reference to the pioneer of the Canadian cement industry, the late Mr. Richard Judson Doyle.

He was born February 9th, 1835, in Hants county, Nova Scotia, where his father was a Baptist minister.



The late Richard J. Doyle, one of the pioneers in the Canadian cement Industry.

He left his home when quite young, and finally came to Owen Sound in 1853. Here we find him engaged in several lines of business. Through his perseverance, energy, and general business ability he succeeded as a rule in the most different and difficult enterprises. He was agent for an insurance company, and for some time a wood dealer. He also manufactured fireproof paints, for which medals were given him at the Exhibitions in Paris and Philadelphia.

In 1879 he bought land at Shallow Lake, nine miles from Owen Sound, Ont. Here it was thought that oil was present, but investigation proved that it was not the case. Later, Mr. Doyle imagined that the marl bed at Shallow Lake might contain phosphates of commercial value. Samples were sent to a chemist and analyzed, and again he was disappointed. These tests, however, as we shall see later, were an important link in the chain

of circumstances that led him into the Portland cement industry. A brickyard was also erected on the place, and one of his pet ideas was to make firebricks from the common brick clay, which, of course, was impossible. Suffice to say that it represents to us a man of great perseverance.

Mr. Doyle, hearing some of his friends remark that Portland cement was composed of lime and clay, and how important an industry its manufacture was in England and the Continent of Europe, at once made up his mind that this was something worth looking into. The technic of cement making was in those days unknown in this country; therefore, for a man of his age, and with already so many enterprises, to take up a difficult subject of this kind, and study it and experiment, was certainly out of the ordinary. From the above mentioned analyses Mr. Doyle knew that he had one of the raw materials for Portland cement, and as for clay, this was in abundance in the locality.

With his usual energy he at once began this new work. His first testing-kiln was built in the cellar under his office, where compositions of marl and clay in different proportions were burnt. Later, he built a larger kiln, with a capacity of three barrels of cement from each charge. This was the first kiln of this size erected in Canada. It can still be seen at the family estate, about three miles from Owen Sound. These experiments must have required considerable time and much work and courage; the latter, because his friends and acquaintances began to think, as the time passed by apparently without any kind of success, that it was a foolish undertaking. That it must have taken him years of work is easy to understand, as he had no knowledge of chemistry, which is so important in cement-making. There are many stories connected with his family, showing the energy with which he worked. It was nothing unusual for him to work all day and the greater part of the night. It was also quite common to find almost every available dish in the house filled with various samples of marl, clay, cement, etc.

At first he was assisted by Mr. Tolton, and later by Mr. Wm. Robinson and Mr. W. McKay. He employed an Englishman, who claimed to be a cement expert, but whom he soon found knew less about cement than he did himself. Finally, he succeeded in making a cement that gave, neat, seven days' test a tensile strength of 675 pounds per square inch. I have not been able to get any exact data as to the time when the experimenting began, as some of his papers could not be located. However, it could not have been later than 1887. A company was organized in 1888 or the beginning of 1889. It was incorporated as the North American Chemical Mining and Manufacturing Co. Mr. Doyle was its first president. Mr. Wm. Robinson was sent to England to get some samples of cement tested and to study the cement industry in general. He became acquainted there with Mr. F. Ransome, the patentee of the rotary kiln.

Grasping the idea of the importance of this kiln, Mr. Robinson bought one for his company. Mr. Doyle claims in some of his letters that this was the first one on this continent. The kiln did not, however, prove a success, and was, therefore, abandoned. From a report in the *Toronto Globe* of August 24th, 1889, we find that Mr. Doyle's company was then in a position to turn out 134 barrels of cement per day. The company was later changed to the Owen Sound Portland Cement Co.

Mr. Doyle lived to see his enterprise in cement manufacturing a great financial success. He died October 26th, 1903.

* By A. G. Larsson, C.E.