

PERPETUAL MOTION.

This from a contemporary:—For many years now perpetual motion has been a popular phrase, and many attempts have been made to demonstrate that such a thing is possible. As a matter of fact, however, it is about as impossible as it would be to get something out of nothing, and that is what the attempts amount to. The nearest approach to perpetual motion which is at present known to science is seen in the radium clock, as it is called. It is an invention of the Hon. R. J. Strutt, and consists of an electroscope suspended from the lower end of a small glass tube containing a tiny piece of radium about the size of a wallflower seed. This is fastened to the top of a large sealed vessel from which the air has been extracted. In its disintegration the radium gives out what are called Alpha rays and Beta rays. The latter, which have a charge of negative electricity, get clear away from the radium chamber, while the former, carrying a positive charge remain inside, and set up an accumulation of positive electricity, which, by induction, charges the two leaves of the electroscope, these leaves being charged with the same kind of electricity, repel each other until they touch the foil at the sides of the tube, which, having a metallic connection to earth through the glass, discharges them, and allows them to fall again and again and apparently, would go on for ever. If the radium were inexhaustible this would no doubt be the case, but, as a matter of fact, a diminishing process, though an extremely slow one, is going on. It is calculated that have the seed of radium would disappear in about a thousand years, so that a clock of this kind started in the year A. D. 1 would now be going at about quarter speed.

HOW COAL SPOILS.

That coal, after being mined, deteriorates rapidly unless used at once, has been established by recent experiments, of which the latest and most thorough are probably those made by the Chemical Department of the University of Illinois, in co-operation with the Illinois State Geological Survey and the Engineering Experiment Station. The rapidly extending practice of storing large amounts of coal makes this question of deterioration of vital importance. We are told by The Engineering Magazine, in an abstract of a review of the subject by S. W. Parr and N. D. Hamilton in Economic Geology, that storage plants with a capacity of 100,000 tons are not uncommon. A deterioration of one per cent. in value in such an amount evidently corresponds to a loss of 1000 tons, and it is shown that in a few months the loss of heating power may be much greater than this, even reaching ten per cent. After five or six months, however, the deterioration appears to cease. Curiously enough, the only way to prevent it appears to be to store the coal under water, sheltered and unsheltered coal piles being equally affected so long as in contact with air. Says The Magazine just named:

"The samples subjected to outdoor exposure uniformly showed marked deterioration, but of varying amount. The treatment of the sample was identical, the coal remaining in shallow boxes exposed to the various temperature and moisture changes from October to July. The variations in heat loss therefore ranging from two to ten per cent, must be ascribed to

inherent properties of the coals themselves. All showed a tendency to disintegrate, but they varied distinctly with regard to the ease with which they crumbled under pressure.

"The results of the tests on the coals subjected to a dry atmosphere and a slightly elevated temperature were rather unexpected in that, with one exception in which the deterioration was practically the same, they showed a greater deterioration than in the case of outdoor exposure. This would seem to contradict the popular idea that a roof over coal in storage is supposed to be preferable to open exposure. The samples subjected to high temperature with frequent wetting down behaved in general like those exposed to outdoor influences, though in some cases a greater deterioration was observed in the former samples. Here the results are undoubtedly variable in accordance with the variation of structure and composition of the coals themselves. In general a greater persistence of value might be expected in the dense and less friable coals and in those with less of iron pyrites throughout their texture.

"In conclusion, the authors summarize the results as follows:

"(a) Submerged coal does not lose appreciably in heat value.

"(b) Outdoor exposure results in a loss of heating value varying from two to ten per cent.

"(c) Dry storage has no advantage over storage in the open except with high-sulphur coals, where the disintegrating effect of sulphur in the process of oxidation facilitates the escape of hydrocarbons or the oxidation of the same.

"(d) In most cases the losses in storage appear to be practically complete at the end of five months. From the seventh to the ninth month the loss is inappreciable.

"(e) The results obtained in small samples are to be considered as an index to the changes affecting large masses in kind rather than in degree, but, since the losses here shown are not beyond what seems to conform in a general way to the experience of users of coal from large storage heaps, they may be not without value as an indication of weathering effects in practice."

The Annual General Meeting of the Shareholders of the Dominion Wire Rope Company, Limited, for the election of Directors, etc, was held at the Company's Head Office, Imperial Bank Chambers, Montreal, on Thursday, Feb. 20th, 1908. The following Directors were unanimously re-elected for the ensuing year, viz: F. W. Fairman, F. H. Hopkins, C. W. Colby, Geo. P. Butters, E. E. Fairman.

At a meeting of the newly elected Directors, held subsequently, the following officers were unanimously re-elected for the ensuing year, viz: F. W. Fairman, President; F. H. Hopkins, Vice-President and Man. Dir.; J. J. Rosevear, Secretary and Treasurer.

The Nova Scotia Steel & Coal Co. are prospecting for iron at Whyocoomagh. While some of the ore carries over 50 per cent. of iron, some of it is less than that, so that the average is not so high as desirable. It may be higher in iron as the prospecting proceeds.