

**Nature and Composition of Coal.**

Coal is a combustible mineral of vegetable origin, which is found to vary in color, lustre, density, composition and calorific powers with the localities in which it is found. It is generally estimated that good American anthracite weighs from 90 lbs. to a hundred lbs., per solid cubic foot; Maryland bituminous about 85 lbs. and English cadal from 77 lbs. to 82 lbs.

Carbon composes the greater part of coal, rising often above 90 per cent. of the whole. The remainder consists of volatile matters, such as oxygen, hydrogen and nitrogen, of earthy matters like the limestones, and frequently of oxide of iron or sulphur, or of free sulphur which produces sulphurous acid when burned.

The percentage of oxygen may be as high as ten or twelve, and, when united with the hydrogen, it goes to form the bitumen or tar, a kind of thick oil which will render the combustion sluggish. Finally, the hydrogen in its combination, partly with the nitrogen, produces in its combustion, ammonia gas and more or less water.

According to Marsilly, coal commences to decompose between 100° and 575° Fahr. according to its kind; and the distillation of the bituminous matter takes place at about 390°; but, according to other authorities, the distillation does not occur until a temperature of 750° has been reached.—*Power-Steam.*

**The Origin of the Bell Cord.**

Buffalo Courier:—It was on the Erie about 1840. The road was then in operation between Piermont and Turner's. One passenger train,

which was also a freight, ran each way on the road. The conductor was "Poppy" Ayers. There was no ticket office or agents in those days, and the conductor had to collect fares on the cars. There was a great controversy between the conductor and the engineer as to which was the actual head train management. "Poppy" Ayers had an engineer who was particularly obstinate in his belief that in the engine was vested the superior rank. In collecting fares "Poppy" frequently had difficulty in getting his money from obstreperous passengers, and he could not throw such passenger off with the train going at full speed, and as he had no way of letting the engineer know that he wanted the train stopped, a great many fares were lost by passengers reaching their destination before they could be induced to pay up. One day Ayers had had a particularly annoying run in that respect, and after reaching Turner's he resolved to provide some means of communication between himself and the engineer, so that he could control the management of the train between stations. After much thought he hit upon a plan. He sent to New York for a hundred yards of bed cord. To one end of this he fastened a stick of wood, which he hung in the engineer's cab, or what passed for a cab in those days. Then he ran the rope back over the cars to the end of the train, and let it hang down so he could catch hold of it on the rear platform. He told the engineer that when he pulled that stick of wood the train must be stopped, no matter where it might be. But this innovation in railroading struck the engineer as one that would lower his rank and remove from him the dignity of being master of

of the train. So on the first trip with the conductor's signal he removed the stick of wood, and "Poppy" Ayers was as bad off as ever. But the conductor was determined to settle the question then and there, and when the train reached its destination he replaced the stick of wood, and told the engineer that if it was removed again, or was not noticed when agitated, either the engineer must lick the conductor or the conductor would lick the engineer. The engineer removed the stick at once, and "Poppy" Ayers hit him a blow that knocked him off the engine. The conductor jumped after him, and followed up his blow with a trouncing that made the engineer cry "enough." That settled the introduction of the train signal to American railroading, and also the question as to who was the master of the train. "Poppy" Ayers replaced the stick, and it was not again disturbed, but its signalling was answered faithfully and promptly by the engineer. The idea was soon improved upon, and the stick of wood gave way to the bell, and every railroad then in existence, or that ever came into existence afterward, adopted this system. "Poppy" Ayers died four years ago at Oswego, aged 80 years. He was retired from the service of the road on a pension in 1868.—*Industrial World.*

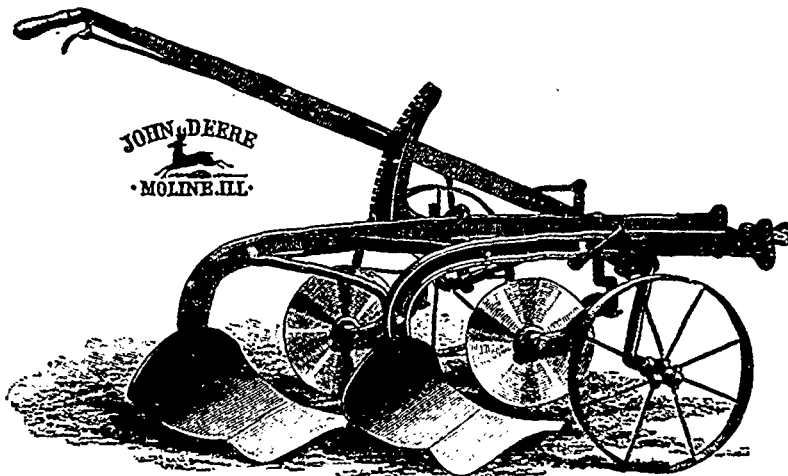
REAL estate in the vicinity of the Hudson's Bay flats has come to the front lately by the Northern Pacific Ry. Co. locating the station, freight shed, and workshops on the reserve. The Hudson's Bay Co. have sold \$12,000 worth of property in the last few days, and enquiries are still numerous.

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