

mostly caking or bituminous, sometimes cannel coal is used as an enricher to the illuminating power, but more often, especially on this continent, the carburetted water gas plant is used for this purpose instead of cannel coal.

The operation of carbonization is as follows: the coal is brought into the works in cars, in some cases in boats, and dumped into chutes or hoppers over breakers that break the coal up into convenient size to be handled by the charging machines: from the breakers it goes into the stores and thence as required to overhead hoppers in the retort house, from which it is fed as required into the charging machines. The charge delivered into the retort is usually about 300 pounds for a ten foot long retort. I might add here, that the type of retort charging and discharging machines are many, each claim some distinction over the other. The motive powers working them are various, such as steam, pneumatic, hydraulic and electric, and in these days of monoplanes, biplanes and the other aerial wonders, the possibility of charging and drawing machines being worked on the wireless system is not at all unfeasible.

The charge now being all delivered into the retort, the lid is closed and the distillation or carbonization goes on. The aim in the retort house of all gas works is to impart to the retorts just sufficient heat to economically carbonize a given quantity of coal in a given time, having regard to the quantity of gas made and the illuminating value. The average bituminous coal requires a temperature in the retort of 2,000 deg. F., above or below this is not good practice, for if above, the great bugbear of lamp black is produced along with its consequent evils of stopped ascension pipes, or if below, the charges of coal in the retorts are not thoroughly burnt off, hence loss of gas and a bad coke.

The charge of coal now being burned off, the coke is drawn out of the retort by the discharging machine, quenched, sorted and graded, and stored ready for sale.

Just a few words now on the type of furnace mostly used in gas works to heat the retorts. The usual place for the furnace is central with the setting at a certain distance below the bottom tier of retorts. The number of retorts in a setting is from one to twenty, the usual number are eight and nine, that shown on the drawing being a setting of eight. The most usual type of furnaces are on the regenerative principle, only the smaller works employ direct fired or simple generator furnaces. The one shown on the drawing is what is called a full depth regenerator producer furnace, fed with the hot coke direct from