

It was not determined whether at temperatures attained in a coke oven, the cracking of the tar fog particles into the elements carbon and hydrogen, would occur. It is obvious, however, that fire in an oven or main would induce only incomplete combustion of the tar, and would leave large proportions of soot suspended in the gas. It is doubtful if these particles, of soot, as distinct from tar or pitch, would be found in gas from ovens working normally.

After several unsuccessful attempts to prevent the deposition of carbon, or to devise a means of flushing it off with light oil, it was decided that the insulator must be cleaned periodically by wiping or burning. The insulators used have the usual rough surfaces found on silica combustion tubes. From these pitted surfaces it was impossible to remove the carbon except by burning. At our suggestion the manufacturers undertook to glaze the surface of the quartz insulators. The two tubes, obtained before the work had to close, exhibited pitted surfaces in spots where the glazing had been imperfect. Nevertheless, it was possible to demonstrate that the glazed surface will give satisfaction. From such a glazed quartz surface the carbon can be removed by rubbing with an oiled rag, if this is not delayed until the current has begun to discharge over it. It might also be possible to clean the insulator without opening the chamber, by using a wiper on the end of a rod passing through a gland in the wall. In any case no arduous attendance is required and, in all probability, cleaning would be necessary less than once a shift.

Treater Capacity.

As pointed out above, the volume of gas that can be cleaned in the treater is limited by the free carbon particles carried, and not by the tar fog. "Pounding" of the exhauster occurs before the treater capacity for tar precipitation has been reached.

The only available method of measuring the gas was by means of a Pitot tube in the pipe leading from the treater to the cooler. No such measurements in small pipes are very accurate; but in this case they were made more difficult by the pulsations of the exhauster. However, it was definitely shown that only a small quantity of free carbon, and practically no tar, would be left in gas that had passed through the pipe at as high a rate as 43 linear feet per second. Disregarding the water vapour content, this implied a capacity of one and one-half million feet of gas at 60° F. per day. As there is no meter in the plant