

gas light, unit for unit, therefore, the cheapest light in every way is the incandescent gas and the dearest is the electric.

Now, as regards fuels, coke is the most convenient and by far the cheapest, say coke at \$5 per ton per month, while anthracite would cost \$7 per ton per month. Coke is a convenient fuel superior to hard coal; it is comparatively clean, ignites easily, makes a hot fire, and being almost pure carbon leaves a very small percentage of ash. Indeed, for ordinary purposes, coke is almost too efficient a fuel, that is, it makes so intense a fire that damage to the fire box is the result. To avoid this and keep a fire in all day or over night, when the fire is well started it should be banked with cinders or fine coal.

I have spoken of the usefulness of gas for lighting and heating, also the by-products, coke as a fuel. There are other by-products equally as useful. Tar for instance, is put to many uses; as a water proofing medium it is well known. The various oils obtained in the fractional distillation of tar are most useful, such as benzine, benzol the basis of aniline dyes also an enricher for poor quality gas, carbolic acid, creosot oil for preserving timber, and as a source of lamp black, anthracite oil, a basis of alizain used in dyeing, and many other products. The ammoniacal liquor is sold and turned to good use by the chemical works in making the salts of Ammonia, also the spirit. A good fertilizer is also made from this, called sulphate of ammonia. I have spoken previously in this paper on the extraction of sulphur from the oxide used in purification. There is also a compound in gas called cyanogen. This can also be extracted in suitable apparatus, and is used on the refining of silver, gold, etc.

Mr. Ellis,—

I would like to understand why in some gas works they use dry seals and in others wet seals, in the hydraulic mains?

Mr. Herring,—

Wet seals are used to prevent the gas in the hydraulic mains from getting back into the retorts; when dry seals are used they have a valve fixed on the hydraulic main in place of dip pipes. This valve is opened and closed automatically, and prevents the gas getting back into the retort.

One of the advantages of the dry seals is that the gas has not to bubble through any liquid, especially tar, at this part of the apparatus.

In cooling gas the idea is not to cool the gas too quickly, if the gas is cooled suddenly the result is, we lose all the light-giving hydro-carbons, which would impair the illuminating power of the gas.