

In the following analyses the method pursued in the Laboratory of the Pennsylvania State Survey has been adopted, and is briefly as follows.

The moisture is determined by heating at 212 degrees for one hour, or until the sample ceases to lose weight. The percentage of volatile ingredients by fast coking is got by heating the coal in a loosely-covered platinum crucible until the gas flame ceases to be visible, then a nearly white heat is applied for about five minutes. The percentage of volatile matter by slow coking is got by raising the heat very gradually, and finally applying a nearly white heat as before.

The total sulphur is estimated by fusing one gramme of the coal with ten of carbonate of sodium, and six of nitrate of potassium, dissolving the fused mass in water acidulated by hydrochloric acid, and then evaporating to dryness; re-dissolving the residue in dilute hydrochloric acid, adding water and precipitating the sulphur by chloride of barium from the filtered solution. The sulphur present as sulphate of calcium is got by boiling with carbonate of sodium, and deducted from the total amount, and the necessary corrections made, for the sulphuric acid present in the carbonate of sodium. The ashes are got by the usual process.

In this paper the ton is invariably the long one of 2,240 lbs. The localities of the various seams and collieries will be found marked on the maps accompanying the papers contributed by the writer on the Picton Coal-field, and the submarine coal of Cape Breton. The calculations of the theoretical evaporative powers of the fixed carbon are, for comparison with the results of the British naval steam-coal trials, got by Regnault's formula, although later researches have somewhat modified the values determined by him.

The following analyses of the Cape Breton coals have been arranged in descending order, in conformity with the results arrived at by the officers of the Geological Survey. Although this arrangement of the horizons of the various seams differs somewhat from that proposed by the writer and others, he thinks that the results of a survey extending over several years form the most reliable guide.

The following table shows the arrangement of the seams analysed in their supposed equivalency :—