

THE BRITISH COAL UTILISATION RESEARCH ASSOCIATION

Information Circular No. 62

A Rapid Approximate Method for Determining Moisture in Coal

by W. J. Allum

SUMMARY

A rapid, approximate method for determining moisture content is described, and compared with others, including British Standard methods.

(1) Introduction

When testing coal-burning appliances, it is often desirable to know the moisture content of the fuel at the time when it is being used. Nevertheless, it may be unwise to sample for analysis long before the start of the test, as, for example, if the fuel stock is kept in the open. Some sacrifice of accuracy can often be made provided that it leads to an earlier estimate of moisture content.

Any procedure which involves air-drying and grinding the coal is at a disadvantage when rapid working is required. On the other hand, if unground material is to be used, a larger amount must be taken for each determination to avoid sampling errors. British Standard Specification methods for coal not bigger than  $\frac{1}{2}$  in. require 2-lb. samples whereas those for material ground to pass a 6-mesh sieve need only 100 g or less.<sup>1</sup> Large coal has to be broken down to  $\frac{1}{2}$  in. before a 2-lb. sample is drawn.

The present investigation was concerned with  $\frac{1}{2}$ -in. smalls and the method adopted was a development of the B.S.S. distillation method for 2-lb. samples. It was based on the ideas published almost simultaneously by Marskell and Rayner<sup>2</sup> and Simek and Ludmila<sup>3</sup> and studied subsequently by Bainbridge, Scanlan and Belyea.<sup>4</sup> These authors did not fully compare their procedures with those of the British Standards, but they did find that distillation usually gave higher results than drying in an air oven at 105°C gave - a conclusion that is supported by CERCHAR.<sup>5</sup> It was also claimed that results obtained with one apparatus differed from those with a British Standard apparatus by "probably less than 0.15 per cent".

This report describes experiments that were carried out to compare the new method with two standard methods, air-drying at 105°C, an acetylene-liberation method and another non-standard distillation method.