

THE BRITISH COAL UTILISATION RESEARCH ASSOCIATION

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Some Aspects of Fundamental Combustion Research at B.C.U.R.A. -

The Combustion of Coals in Model Fuel Beds *

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SUMMARY

The combustion of coals is discussed, using as a basis the results obtained with a combustion pot, operated so as to simulate the fuel bed conditions of a travelling-grate stoker. The advantages and limitations of such combustion pot studies are mentioned. Experiments with this technique are summarised which illustrate:-

- (a) some general characteristics of the two stages by which solid fuels burn.
- (b) the effect of coal type (rank) in determining the relative contributions of these stages to the overall process.
- (c) the modification of these stages by dilution of the combustion air with the components of flue gases and by the addition of water to coals.

An experiment planned to measure directly the mode of dissipation of heat from fuel beds is mentioned.

1. Introduction

Two outstanding fuel problems are now being investigated by B.C.U.R.A., namely the influence of coal characteristics on boiler efficiency and the behaviour of the inorganic constituents of coal in so far as they affect the availability for service of water-tube boilers. It is reasonable to believe that both these problems require for their solution a detailed knowledge of the important phenomena associated with the combustion of coals in fuel beds.

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A portion of the work summarised in the present paper is in course of detailed publication with the following co-authors: Dr. J.R.Bowring, Mr. W.D.Smith, Mr. C.R.Wyllie and Mr. J.E.Roughton.