

THE BRITISH COAL UTILISATION RESEARCH ASSOCIATION

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A Thermal Precipitator for the Gravimetric  
Estimation of Solid Particles in Flue Gases

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Introduction

The instrument described is designed to collect all the solid matter from a representative sample of flue gases, and to handle a sufficiently large sample of gas for the deposit to be easily weighed.

Its advantages over the usual filtering methods are that it does not offer excessive resistance to the gas flow, and that it is apparently capable of retaining the smallest size of particle present in flue gases. In addition, the use of aluminium foil collecting surfaces facilitates accurate weighing, since - unlike the usual filtering materials - their capacity for adsorbing moisture is negligible.

The instrument depends for its operation upon the existence of a dust-free space surrounding a hot body.\* This property is used in the thermal precipitator made commercially by Messrs. C. F. Casella and Co., Ltd.; this instrument is intended for the collection and microscopic examination of particles from dusty atmospheres, but has not been considered suitable for weighing deposits of tar and soot collected from hot flue gases.

Application

The thermal precipitator has two main applications in the work of the Domestic Appliance laboratories; firstly to give a direct measure of the weight of smoke being emitted by an appliance by suitable sampling of the flue gases; and secondly in conjunction with a newly designed optical smoke meter\*\* to study optical density readings in relation to the weight of smoke emitted.

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\* H. H. Watson. Trans. Farad. Soc., 1936, 32, p.1073.

\*\* A description of this instrument will be given in an Information Circular when the calibration work has been completed.