

DELHI ROAD,  
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**AUSTRALIAN COAL INDUSTRY RESEARCH LABORATORIES LTD.**

APPLICATIONS OF MAGNETITE IN THE WASHING OF COAL

by

R. G. BURDON \*

INTRODUCTION

Australia is seventh in the list of World coal producers, our production (for all coal) representing two per cent. The quantity of coal mined is increasing, especially in relation to our export trade and in this era of increased technological proficiency the degree of coal preparation demanded has increased.

In the concentration of metalliferous minerals Australia has been a leader in scientific investigation and process development. This has not been the case for coal preparation and our contributions have been less dramatic in this field. It is anticipated that developments will occur in this special field of mineral processing in the future.

Coal as mined has two forms of impurity, the first is liberated ash forming constituents, the second inherent mineral matter. The difference in density between "clean coal" and "liberated reject" is usually of the order of 1.0 and standard gravity concentration processes have been adapted for the separation of these constituents. One process, that using dense media, has been most successful since it gives a wide cut point. This is one process which has been developed mainly by coal preparation engineers. Today approximately thirty per cent of the coal cleaned in this country is treated by the dense medium process. The development of the dense medium cyclone will increase the percentage of coal cleaned by this principle of sink and float.

Magnetite is used in sixty five per cent of the dense media units so the importance of this material as a medium is apparent.

This paper is concerned with dense medium separation and the role of magnetite in the process.

\* Senior Lecturer in Mining Engineering, University of New South Wales