

THE BRITISH COAL UTILISATION RESEARCH ASSOCIATION

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CHEMICALS FROM COAL

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Introduction

Organic chemical industry makes use of a large number of products based on coal. The purpose of this survey is to present a concise and factual account of these products.

Direct use of the coal substance as a source of carbon compounds has no place at present in chemical industry. This must wait upon further research on the chemical and physical-chemical constitution of coal. The nearest approximation to direct use is the hydrogenation of coal by the Bergius method, which has so far not been an economic success in the United Kingdom, although it provided Germany with an invaluable source of liquid fuels under the special conditions of wartime. In the United States, the direct oxidation of coal has reached the pilot-plant stage, but the products (polycarboxylic acids) have not yet found wide application.

Organic chemicals are obtained from coal in the United Kingdom only as by-products of the carbonisation industries. A small though increasing amount is supplied by the low-temperature process, but the great bulk by the coke-oven and coal-gas industries.

The whole range of synthetic organic products - fertilisers, pharmaceuticals, fuels, rubbers, plastics, detergents, explosives - have come to be regarded as indispensable to the civilised world. It is important to emphasise that these multifarious finished products can be obtained from a comparatively small number of intermediate products - that, in fact, the life-blood of chemical industry is the supply of "intermediates" - and the source of these intermediates will be determined by prevailing economic and political considerations. Chemically, it is equally practicable to manufacture the intermediates from either oil or coal or agricultural products.

This survey is limited to coal products, and is in the main concerned with intermediates, although a few of the final products are indicated. The diagrammatic method of presentation suggested itself as the most concise manner of setting out the inter-relations of the various materials; to avoid over-elaboration of the charts, the uses of the products have been listed separately. Generally speaking, all the products and processes shown are chemically possible, but they are not necessarily economically feasible.