

power stations by skilfully devised abstergent processes”.

The authors deal consummately with the subject of the by-products derivable from coal; of particular interest in this respect is their account of a method of producing *methanol*, a possibility which has been explored since the War, namely, the pressure-catalytic-synthesis of methyl alcohol ('Methanol') from carbonic oxide and hydrogen contained in 'water gas', by exothermic action. A quite recent development of this process—the Fischer-Tropsch process—has resulted in obtaining thereby light oils, waxes and heavier oils, which by another process of treatment can, according to Prof. Fischer, be converted into lubricating oils.

This process for the purposes of oil and petrol production may turn out to be a formidable rival to that of the hydrogenation of coal.

But I must bring this review to a close, however enthralling the subject. Enough, it is hoped, has been said to point to the catholicity and profundity of the work and to induce all interested in the subject to read it for themselves. The style is lucid and easy. To each chapter is appended an excellent bibliography. The illustrations are clear and helpful, and the tables, of which there are no less than 136, are not the least valuable part of the work—a work on which the authors are to be congratulated as well as the publishers.

R. A. S. REDMAYNE.

Properties of Carbon Dioxide

Carbon Dioxide

By Prof. Elton L. Quinn and Charles L. Jones. (American Chemical Society, Monograph Series, No. 72.) Pp. 294. (New York: The Reinhold Publishing Corporation; London: Chapman and Hall, Ltd., 1936.) 37s. 6d. net.

THIS book is one of the American Chemical Society's valuable series of monographs which fulfil the dual purpose of presenting the available knowledge on the particular subject in a form generally readable by the scientific worker, and of promoting research by furnishing a well-digested survey of the progress already made in the field and by pointing out directions in which investigation needs to be extended.

In the present monograph, a survey has been made of physical, chemical and physiological properties of carbon dioxide, which should prove useful and suggestive, but the reviewer considers that there is a lack of proportion in the monograph as a whole and that too much space has been allocated to the three chapters on the commercial production and application of carbon dioxide in liquid and solid form. It may be mentioned that the two most important applications are the carbonation of beverages, for which the liquid is employed, and the refrigeration of ice cream, which requires the solid form. The possibility of commercial application also appears to have influenced somewhat the selection and arrangement of the scientific data, due possibly to the fact that while one of the authors is a professor of chemistry the other was formerly chief engineer to the American Dry Ice Corporation.

In the first two chapters are found the scientific and industrial history of carbon dioxide and an

account of its occurrence and functions in Nature. A later chapter of ten pages deals with carbon dioxide in relation to vital processes. Since carbon dioxide is not an active compound, it is perhaps not surprising that twenty-three pages have been found adequate to deal with its chemical properties. The authors themselves point out that the purpose of this chapter is to consider many of the acidic reactions in aqueous solution and to deal also with some reactions taking place in the dry gas. Physical properties are described in great detail in a chapter of seventy-nine pages, but here the authors confess that selection of the best and most reliable physical data is most difficult, and in many cases practically all the recorded data have been included and it has been left to the reader to select those he considers the most useful. The remaining three chapters, dealing with manufacture and commercial applications, comprise nearly half the book, although the authors state in their preface that they have made no special effort to paint a picture of the carbon dioxide industry as it exists to-day.

From the preface also it appears that difficulty was experienced in presenting "a well co-ordinated discussion" of "such widely divergent ideas as the natural occurrence of carbon dioxide in Yellowstone National Park, the treatment of skin diseases with solid carbon dioxide and the blasting down of coal with the liquid form". It is suggested that the difficulty has arisen by failure to realize that carbon dioxide itself is the only co-ordinating factor, and whatever ramification the subject may possess it should be possible to adhere to the two purposes which this series of monographs seeks to fulfil.

R. T.