THE BOOKSHELF

The St. Lawrence Navigation and Power Project, by Harold G. Moulton, Charles S. Morgan, and Adah L. Lee.

EDITOR'S NOTE: The following book review by Dr. Eugene Van Cleef, of the department of geography appeared in a recent number of *Bulletin of Business Research*, published by the College of Commerce. Besides being well-qualified to give a resume of this book, we feel that Dr. Van Cleef has brought out the most pertinent facts concerning this project.

Any publication issued under the direction of Dr. Harold G. Moulton must command the high regard of the economic world. One of his most recent works, prepared in collaboration with Charles S. Morgan and Adah Lee, is no exception to the rule. Dr. Moulton's statement relative to the proposed St. Lawrence Waterway improvement offers an abundance of material which severely challenges the enthusiastic proponents of this project.

About one-third of the volume is devoted to the interpretation of the facts as uncovered by the investigators, and the latter two-thirds consists of a series of appendices treating largely with the movements of those commodities in international trade which could conceivably enter into the trade that would be attracted to the Great Lakes. After conceding as much as seems possible to the supporters of the proposed improvement, the authors conclude that "the proposed twenty-seven foot navigation project cannot be justified on economic grounds. The inclusive costs—to taxpayers and shippers—are much greater than present transportation charges."

Moulton has endeavored to show that if any improvement is to be undertaken, it must involve a channel depth of at least thirty-three feet, in order that the waterway may meet the expectations of those who propose a twenty-seven foot channel. However, even if the thirty-three foot depth were accomplished, he believes there would not be sufficient freight to attract ocean ships, and that ships which could handle the freight would not do so because of the fact that navigation is closed for periods ranging from four to seven months. This would necessitate a shifting of the activities of ships from the inland waterway to ocean routes—a shift that would not be practicable.

The active agents seeking to develop public sympathy for the project have estimated the cost, exclusive of the power development, to be in the neighborhood of $185,000,000. These figures do not include improvements that would be necessary in present Great Lakes' channels and ports, nor does it include the cost of maintenance or interest upon the investment over a period of some eight years during which the construction work would be in progress. Some estimates have placed the cost at about $500,000,000 to be divided between Canada and the United States. The volume under review, after careful calculations, estimates that the cost of improvements for navigation through the entire waterway will total slightly over $600,000,000, and for the power project about $385,000,000, making a total approximating one billion dollars. These are figures to conjure with, and the respective parties interested in the development cannot afford to ignore them.

While Dr. Moulton's argument, undoubtedly, is sound from the purely technical economic viewpoint, there is perhaps one weakness in it to which some attention should be directed. His calculated costs which include appropriations by the nation are applied to the ultimate cost of transportation. If national improvements are to be reckoned in terms of immediate returns, then some of the other projects which we have undertaken, it would seem, should never have come to pass. For example, we maintain our sea ports through appropriations by Congress. The cost of up-keep of our ports is not covered by the dues which ships pay for the use of the harbors, or by other port revenues. Upon a purely economic basis it is doubtful whether we could show a direct profitable return upon our investment. However, no one would suggest that we close our ports. There are certain benefits returned to the public that are not always measurable in dollars and cents. They are construed as contributions to the general welfare. Every highway, whether it be water, rail or country road which increases the traffic facilities of a nation as a whole, just as paved highways in urban and rural districts return profits not only to those located immediately upon them but even to more remote districts. Hence if the latter viewpoint has any validity we may look upon Moulton's report as of great value in the development of facts relative to the St. Lawrence project, but not necessarily as discouraging.

The contribution certainly is timely and one for which the public should be appreciative because, no doubt, before long the politicians will begin their verbal combat treating with the pros and cons of this project, and the public should have a reliable source of information to turn to during these debates. The book is simply written and understandable by the average layman.

—*Eugene Van Cleef*

DRY ICE

Within the last several years dry ice has come into considerable use. The high cost, at the outset, of dry ice as compared with water ice, made the ice cream manufacturers skeptical as to the economy of such a refrigerant. However, they have found this product to be much more economical because dry ice gives three times as much refrigeration per volume as ordinary ice. This makes possible the use of smaller and lighter parcels. The carbon dioxide gas which is given off, acts as an insulator and also keeps the insulation of the container dry. The insulation of the container can be made of fiber or paraffin-treated paper.

The manufacturing of the solid carbon dioxide has been developed so that the carbon dioxide can be made from coke and the by-products used to help in solidifying the gas.

—*Industrial and Engineering Chemistry.*