

value to those concerned with tobacco cultivation in other parts of the world where monsoon or similar climatic conditions prevail. It is divided into three parts. In the first part soils, climate, botany, cultivation, curing, pests and diseases, etc., are dealt with. Part 2 deals in detail with the five basic types of tobacco produced in India, namely, flue-cured tobacco, bidi tobacco, cigar and cheroot tobacco, hookah tobacco, chewing and snuff tobacco. The third part is concerned with marketing.

The book is not without certain errors, one of the most lamentable being the statement in the second paragraph of the introduction that Christopher Columbus discovered tobacco in his voyage from Persia to Spain on the island of Tobago!

#### Transactions of the Society of Rheology

Vol. 5, 1961. Edited by E. H. Lee. Pp. ii + 382. (New York: Interscience Publishers Inc.; London: Interscience Publishers, Ltd., 1961.) 10.50 dollars.

THE 1961 volume comprises the majority of the papers presented at the thirty-first annual meeting of the (American) Society of Rheology in Pittsburgh (Pa.) and includes symposia on the mechanics of continua and on the rheology of suspensions as well as nearly twenty papers concerned with other topics. I remember criticisms at the first meeting (1929) that rheology was too mathematical for the practical man; but, more than thirty years later, it seems that workers in many industries are quite able to cope with triple integrals and tensor notation.

Like all sciences, rheology has its fashions. At the moment, normal stresses ('Weissenberg effects') and dynamic mechanical properties lead in the theoretical field; and die entry and extrusion problems on the practical side. High polymers are still in the lead among the materials of interest, but a paper on the rheology of blood reminds us of increasing attention to biological applications.

The Bingham Medal for 1960 has been awarded to Dr. B. H. Zimm for outstanding work linking optical with rheological methods in the study of macromolecules and the determination of their molecular weights.

Many of the papers are very short, but the authors' addresses are given and readers will doubtless write for reprints of longer articles.

The *Transactions* are, as always, well printed and produced but the price for a volume of this size is rather high.

G. W. SCOTT BLAIR

#### Technical Data on Fuel

Edited by H. M. Spiers. Sixth Edition, completely revised. Pp. xi + 360. (London: British National Committee, World Power Conference, 1961.) 60s. net.

THIS sixth edition of a well-known and much-used reference book constitutes a marked advance on its predecessors, for it contains more information in the form of both text and tables and the size of the page has been increased. This may be a disadvantage to the worker who wishes to have a readily portable book of useful handiness, but the greater wealth of information compensates amply for the change in character. The tables and diagrams are brought into better relation with the text and most of the tables are placed on single pages. In general it will be agreed that the changes will be approved by fuel tech-

nologists. The contents of the book have been extensively revised, tables have been recalculated where necessary, or replaced on the basis of more recent or more trustworthy data, and the conversion factors and the symbols for units have been brought into conformity with British Standard specifications. These features that have been confirmed in use constitute a worthy improvement. The sections that have been extensively revised or completely re-written include many subjects in which technical advances are bound to move with the times, and the new information is therefore all the more welcome.

Of the entirely new topics included in this new edition mention should be made of information relating to atomic and nuclear fuels, the viscosity blending of oils and flow in fluidized systems. A table of additive viscosity functions derived from the usual type of viscosity blending chart enables the viscosity of a blend of several fuel oil components to be estimated with considerable accuracy. Since the use of fluidized beds is coming more into use in fuel technology the information provided is typical of the general character of the advancement shown in this edition. The general legibility of the text, charts and tables is a noteworthy feature of the book.

R. J. SARJANT

#### Symposium on Pilot Plants in Metallurgical Research and Development

Held at the National Metallurgical Laboratory, Jamshedpur, India, February 15th to 18th, 1960. Edited by R. M. Krishnan. (Organized by the National Metallurgical Laboratory, Jamshedpur.) Pp. 304. (Calcutta: The Technical Journals of India Private, Ltd., 1960.) n.p.

THIS symposium drew a large gathering of scientists and metallurgists from ten overseas countries as well as equally important representatives from metallurgical science and industry from India. Formal papers presented totalled 29, of which 16 were by foreigners and 13 by Indians. There were also three lectures by visitors. All papers and lectures are reprinted in full together with the discussions.

The National Metallurgical Laboratory at Jamshedpur is concerned with ferrous and non-ferrous problems, and while part of its activity is devoted to laboratory research in order to exploit to the full the mineral resources of India, a major emphasis has been placed on the design, erection and operation of pilot plants. The scope of these pilot plants ranges from the basic chemistry of metals to financial evaluations of ambitious metallurgical processes. Many of these experiences were reported.

Some of the papers directed attention to the uses and limitations of pilot plant studies and others described in detail many of the successful pilot plants operating in the world. These included coking studies, cupola and blast-furnace operation, ore sintering, oxygen steel-making, refractories, continuous casting, mineral dressing, etc.

It is clear from the papers and discussion that most people present fully appreciated the gulf which exists between initial laboratory findings and economically attractive commercial operations. They also realized the vital part that well-planned pilot plant investigations can play in bridging this gap. This book forms a valuable collection of experiences on this topic and covers a wide range of industries.

E. W. VOICE