

and technologists alike and that a second edition, with more elegant diagrams, will soon be called for.

M. J. SOUTON

## LIGHT FLOW

### Elementary Rheology

By G. W. Scott Blair. Pp. xi+158. (Academic Press: London and New York, May 1969.) 35s; \$5.50.

DR SCOTT BLAIR's latest book is a collection of short readable essays on some of the elementary concepts and techniques of modern rheology, written expressly for the non-specialist and for the reader who wants to avoid mathematical precision. The many asides and passing references, with occasional comments on the historical development of the science of deformation and flow, make for an easy, conversational style; and the book may be regarded as light reading by the serious scientist. The author tends to indulge in reminiscence about his own former research interests: plug-flow and the sigma phenomenon, flour dough and cheese, fractional time-derivatives, a defence of power laws, bovine secretions and psycho-rheology, are all woven into the general pattern. The many colourful names that have been given to rheological phenomena are resurrected for the reader's entertainment: the subtle distinctions between thixotropy, false-body, rheotropy and rheomalaxis, between firmness, hardness and toughness, between fluidity and mobility, between dilatancy, rheopexy and antithixotropy, between tack andhesion, between strain-hardening and work-hardening, between spinability and flow-elasticity, between structural viscosity and yield-value, are all revealed.

Three chapters, introducing topics that are unusual in an elementary text on rheology, are worthy of special mention. They include an account of the simple measurements that have been made to determine the variable viscosities of blood, plasma and serum, and to measure the relaxation time of coagulating blood; and a description of methods available for estimating the rheological properties of such biological materials as bronchial mucus and synovial fluid. These are highly relevant in medicine to the study of diseases such as thromboses, bronchitis and rheumatism. Also included is an essay on the comparison of subjective assessments of rheological properties like firmness, springiness, crumbliness and spreadability with instrumental readings.

The author's deliberate avoidance of "all the difficult mathematics" leads him into difficulties of other kinds, notably in his non-mathematical descriptions of a sinusoidal oscillation, of the effect of combining two shears in different directions, and of possible causes of the Weissenberg climbing effect. His quotation of different formulae in different places for the velocity of fall of a solid sphere through a fluid could possibly be not unconnected with his abhorrence of mathematical precision.

A list of books for further reading, references, and both author and subject indexes are included.

J. G. OLDROYD

## DIXIELAND SURVEY

### The Journal of Charles Mason and Jeremiah Dixon

Transcribed from the original in the US National Archives, with an introduction by A. Hughlett Mason. (Memoirs of the American Philosophical Society, Vol. 76.) Pp. 231. (American Philosophical Society: Philadelphia, 1969.) \$5.

Mason and Dixon were a colourful pair whose story, especially their part in the expedition of 1761 to observe the Transit of Venus, makes very good reading. There

is a very good account of this in Woolf's book *The Transits of Venus* (Princeton, 1959). In a way, however, they are better known as a result of their being commissioned in 1763 to survey the boundary between Pennsylvania and Maryland. The Mason and Dixon line became the boundary between the North and the South in the American Civil War, and one will see the phrase "north (or south) of the Mason and Dixon line" frequently in such works, written in racy or colloquial American, as those of O. Henry. Finally, the entire South became Dixieland, or Dixie, in popular song.

The present work, however, is not at all colourful. It gives an eight-page "Historical Prelude to the Survey" and then a bookful of the actual details of the survey, which is no doubt intended for students of the local history of the period and not for any more general reader.

RICHARD WOOLLEY

## FORECASTING CHANGE

### Technological Forecasting for Industry and Government

Methods and Applications. Edited by James R. Bright. Pp. xxi+484. (Prentice-Hall: Englewood Cliffs, NJ, and London, 1968.) 295s.

WHEREVER interests are liable to be affected by technological change, there is an evident advantage in trying to predict how and to what extent this may happen during the period under review. Attempts to forecast technological change, whether changes in technology *per se*, or in the wider economic, social and political implications of advances in the application of technology, are by no means new. Besides notable published work, for example W. F. Ogburn's *Social Effects of Aviation* written during the War and published in 1946, there must have been countless occasions when the forecasting of technological change has played a part, albeit an implicit or unpublicized part, in reaching industrial or administrative decisions. What has been happening more recently is that the implicit and unpublicized have begun to be made explicit, and the methods and procedures thought or found useful for technological forecasting and for its integration into planning activities have been discussed in front of a wider audience. One reason for this trend may be the increasing awareness of the rate of technological change and of its importance as a part of the environment with reference to which industrial and economic decisions should be made. Another may be the recognition that, at the same time as public funds are being committed to technological projects on an increasing scale, governments are becoming obliged to take measures to restrict side-effects detrimental to public welfare. And a third is the fact that proponents of the management sciences have recognized an opportunity to apply their methods and thinking to what is in practice an extremely complex and difficult pursuit.

It was with the intention of widening the awareness of current thinking and practice that James Bright, a Harvard Business School professor who has been much concerned with exploring and helping others to understand the problems and complexities of technological innovation, arranged and conducted the first of his privately organized "Annual Technology and Management Conferences", at Lake Placid, New York, in June 1967. This he explains in the preface to this well produced but very expensive edition of the papers presented at the conference, which was devoted to technological forecasting. Professor Bright deserves our congratulations for his enterprise, the more so because he assembled as speakers a sizable majority of those who had at the time written usefully and at first hand about the subject. Subject to the limitations of any set of conference papers, he is therefore justified in suggesting that his volume