

especially if it has never been written down, and just as easy to forget the origin of a moral rule, especially if it seems natural and obvious, as most of the allegedly secular rules do.

One could go on to show that the differences between civilized and primitive morals are not so great as Prof. Macbeath supposes, and that therefore his refutation of the intuitionist theory neither requires nor receives much support from anthropological data; but it is time to bring this review to a close by expressing regret that so able, accurate and lucid a writer has so often been led astray by those who, whatever their scientific reputation, are careful describers rather than logical thinkers.

RAGLAN

## SMITHSONIAN METEOROLOGICAL TABLES

### Smithsonian Meteorological Tables

Sixth revised edition, prepared by Robert J. List. (Smithsonian Miscellaneous Collections, Vol. 114: Publication 4014.) Pp. xi+527. (Washington, D.C.: Smithsonian Institution, 1951.) n.p.

THE sixth edition of the "Smithsonian Meteorological Tables" reflects the improvements in meteorological practice and the increase in accuracy of measurement of physical constants which have taken place since the publication of the fifth edition in 1931. The new edition contains 174 tables and an index in 527 pages, against 115 tables and index in the 282 pages in the fourth edition. The increase in the number of physical tables is actually greater than 59, because the tables of international codes and symbols used in transmitting and plotting meteorological observations and the list of observing stations have very reasonably been omitted from the new edition.

Since 1931 the advantages of representing the dynamic state of the upper atmosphere by plotting temperatures and heights for fixed pressures rather than the fields of temperature and pressure at fixed heights have been universally recognized, and tables for the construction and use of charts for fixed pressures appear in the new edition. The mass of water vapour in a kilogram of dry air, the humidity mixing ratio, has become for good reasons a much-used measure of atmospheric humidity, and a table, the first to be printed at sufficiently close intervals of pressure and temperature, is given for obtaining it. This table would perhaps have been more useful for British and American meteorologists if the temperature argument had been in Fahrenheit degrees instead of centigrade. Geopotential metres, in accordance with a resolution of the 1947 International Meteorological Organization Conference, replace geodynamic metres. Very detailed information, including a density altitude nomogram and tables of altimeter correction factors, are given for the American (N.A.C.A.) standard atmosphere; this is a little different from the standard used in Europe. It is, however, impossible to enumerate here more than a fraction of the new tables.

An improvement in arrangement is the placing of the explanation of each table immediately before it, instead of placing all the explanations at the beginning of the book. The new arrangement probably requires more space but will save much turning of pages. The explanations and references to sources are fuller and more critical than before. The compilers have decided,

for reasons fully stated, to adhere to 980.665 cm. sec.<sup>-2</sup> adopted in 1892 by the International Commission for Weights and Measures, for the value of  $g$  at sea-level at latitude 45° in connecting the absolute unit of pressure with the length of the mercury column and not the more recently determined value 980.62. They naturally use the United States nautical mile, which is 0.2 ft. longer than the British one, with repercussions on the relation of the knot to other measures of velocity. The index is very full; an error noted in it is that the density of mercury is given for p. 3 instead of p. 4.

Meteorologists all over the world will be grateful to the Smithsonian Institution and the United States Weather Bureau, whose staff did most of the work, for producing this new edition of an indispensable work of reference. G. A. BULL

## HYDROGENATION OF OILS AND FATS

### Hydrogenation of Fatty Oils

By Prof. H. I. Waterman, with the collaboration of C. Boelhouwer and L. J. Revallier. Pp. ix+254. (New York and Amsterdam: Elsevier Publishing Co., Inc.; London: Cleaver-Hume Press, Ltd., 1951.) 42s.

THIS book, as the author states in his preface, is a review of developments in fatty oil hydrogenation in the light of investigations undertaken during recent years by the author and his collaborators at the Delft Technical University. Prof. H. I. Waterman has produced a stimulating book, which has been translated by Dr. S. Coffey in a competent manner.

As a whole, the book is concise and the subdivisions of chapters is clear and systematic. The appropriate references are conveniently placed at the bottom of the relevant page, and attention is directed to standard treatises; there is a bibliography at the end of the book, together with author and subject indexes. It is not intended to be a complete survey of the subject, and it may seem unbalanced to some readers. This is perhaps understandable, since Prof. Waterman is mainly concerned to show the contribution of himself and his collaborators. Most of the criticisms which may be made against it are on emphasis rather than of substance. Certain sections are treated as an elementary introduction to the fatty oils industry, while in other sections the author would seem to require the reader to have prior knowledge of the subject.

The first part of the book, four chapters comprising a hundred and thirty pages, is a general description of processes utilized in the winning and refining, possibly with a bias towards Dutch practice, of fats, and of the analytical methods used in their technical and fundamental characterization. The section on methods of examination could have been improved by differentiating, on one hand, between those techniques which have become generally accepted by all the leading authorities and, on the other, those not universally favoured.

The remainder of the book is a study of the hydrogenation process. Certain aspects are well done. There is a detailed treatment, in relation to the researches of the Delft school, of the mechanism of hydrogenation, and a critical survey is made of the important subject of selectivity. Adequate attention