

of diagrams to show the atomic processes involved. It is significant to notice how, in comparing the effects of different elements in steel, little or no attention is paid to the atomic as contrasted with the weight percentages of the added elements. The final review, by A. D. Le Claire on "Diffusion of Metals in Metals", deals with a subject of extreme importance, which has been rather neglected in Great Britain. The volume thus covers a wide range and will interest many readers.

W. HUME-ROTHERY

THE FISCHER-TROPSCH PROCESS

The Technology of the Fischer-Tropsch Process

By B. H. Weil and J. C. Lane. Pp. xiii+248. (London: Constable and Co., Ltd., 1949.) 22s. 6d. net.

Die Kohlenwasserstoff-Synthese nach Fischer-Tropsch

Von Dr. Franz Kainer. Pp. vii+322. (Berlin, Göttingen und Heidelberg: Springer-Verlag, 1950.) 39.60 D. marks.

THE technical feasibility of converting coal into liquid fuels, that is, aviation spirit and diesel oils, by the Fischer-Tropsch process, in which a mixture of carbon monoxide and hydrogen prepared from coke and steam is converted catalytically at low pressure into mixtures of hydrocarbons and oxygenated products, has already been demonstrated in Europe. The Fischer-Tropsch process was put into commercial operation in Germany in 1936, and underwent a rapid development during the Second World War when Fischer-Tropsch products were used for eking out deficiencies of chemical materials of natural origin other than liquid fuels.

At the present time intensive research on many aspects of the Fischer-Tropsch process is being pursued in the United States, and the construction of several commercial plants has been projected. In the book by B. H. Weil and J. C. Lane, the American authors have reduced to coherence some three thousand articles, reports and patents on the Fischer-Tropsch process. The work contains twenty chapters, each with a bibliography, and three appendices. The first five chapters deal with synthesis gas, its preparation from coal and from natural gas, and its purification from sulphur compounds. Four chapters are devoted to reaction mechanisms and catalysts and are followed by seven further chapters on the main products (gaseous fuels, gasoline, diesel oil, waxes, lubricants) and the by-products (fatty acids, soaps and detergents, alcohols, etc.). The concluding four chapters on the economics of the process in the United States will be of less interest to non-American readers. The three appendices containing extensive and classified lists of patents, government-released reports and recent articles and papers (to 1946) constitute an extremely useful directory to original sources of information. This book can be recommended as an excellent introduction to the subject for the general reader, and as a reference text for anyone actively working in the field.

The second book, by F. Kainer, covers much the same ground with the difference of emphasis which would be expected from a German author. While the text contains more information drawn from original sources in patents and journals than Weil

and Lane have thought fit to include, it is an ill-digested production, and appears to have been put together hastily from a none-too-complete card-index bibliography of the subject. The author does not seem to have had access to B.I.O.S., C.I.O.S. and similar reports on aspects of German Fischer-Tropsch technology, which contain a vast amount of important matter. Numerous obvious errors have occurred in transcription, especially in the names of British workers.

This treatise is a poor example of a familiar type of compilation. To make a book of this kind, a kind which has a real, if limited, use, requires little critical ability. The user only expects that the bibliographical references to original sources will allow him to assemble for himself the information he needs, and which he can evaluate for his own purposes. To this requirement Kainer's book is inadequate.

E. A. COULSON

HUMAN GENETICS

Principles of Human Genetics

By Curt Stern. (Series of Biology Texts.) Pp. xi+617. (San Francisco: W. H. Freeman and Co., 1949.) 5.50 dollars.

THIS text-book deserves to attain a foremost place in university courses of genetics and anthropology. Its merits are many, and it reveals its author as a gifted teacher of the subject. It has arrived at a time when a reliable, balanced and well-documented guide is badly needed by the student of human biology. Prof. Stern offers the book as an introduction to genetics, with man as the organism by which to illustrate the basic principles of genetics. In this respect the book amply fulfils its purpose. There are particularly valuable discussions on the relation between heredity and the environment, multifactor inheritance, mutation and natural selection. The artificial induction of mutation by radiation has become of great, if rather melancholy, importance in human genetics, and the consideration given to this topic here is very timely. Descriptions of the pathological manifestations of hereditary abnormalities have been presented with discrimination.

The book is opportune also in that a large proportion is devoted to an exposition of the more controversial themes in human genetics, those relating to human evolution and differentiation. Prof. Stern handles carefully, and calmly, the modest body of data available at present on such questions of racial genetics as race 'purity' and 'superiority', Negro-White miscegenation and eugenics. In view of the treatment such questions have sometimes received, even at the hands of specialists in genetics in much bulkier tomes, one cannot be too grateful for the guidance the student will derive from this work. Here, one point may be made. Dobzhansky's view that the apparently large morphological differences between fossil Hominidæ (of generic order according to some) do not constitute a bar to their inclusion in one polytypic species deserves special consideration seeing that reference is made to Gates's diametrically opposed, and generally unaccepted, opinion.

The methods used in human genetics are well displayed in the questions set out at the end of most of the more technical chapters. J. S. WEINER