course and diffusion of cultures, funerals, sacrifice, etc. All the time, it is suggested, man accumulated knowledge which, notwithstanding temporary setbacks, was not forgotten.

Naturally, one cannot expect that in such a small volume chapter and verse could be given for every statement of fact made, and sometimes perhaps the peg upon which much theory has been hung is somewhat slender! For example, it has been suggested that certain reindeer found in a lake near Hamburg had stones attached to them and were sacrifices, and Prof. Childe seems inclined to accept the suggestion. Frankly, the evidence seems to be open to other interpretations, and one would like to be much more certain that the stones were really attached to the beasts with this intention. Excavators—even with the rigid discipline obtaining to-day—must exercise some imagination when attempting an explanation of what they find. Moreover, a tentative suggestion made by one author sometimes appears as a proved fact in the pages of another! When important conclusions hang on comparatively slender evidence, the student must, of course, remain severely critical.

It seems to me, when tracing the path of human discoveries and progress, that mass desire has often been the important factor. Once something is definitely wanted, again and again it has been produced in an extremely short time. Consider how very quickly after the discovery of the smelting of copper came the knowledge that the better material was bronze. Did a long period of goldsmiths' experience precede the making of the treasures of the royal tombs at Ur? How speedily did that scientific toy, wireless, once produced, become an everyday product capable of being manufactured by almost anyone! And this line of thought is applicable equally in the realm of ideas as in that of technical progress—in *intelligence* as well as in *habilité*. Conversely, nothing will teach the Bushmen of South Africa to plant and herd. They have no desire to do so. The difficulty nowadays is to direct the mass desire aright along a true, if unsurveyed, line of human progress. To ponder for a time on the problems of cultural evolution in the remote past with such a master of his subject as Prof. Childe does help us to orientate our minds, when we try to foresee the lines of development along which should run the future course of the progress of mankind. M. C. BURKITT.

DICTIONARY OF BIOCHEMISTRY

Dictionary of Biochemistry and Related Subjects Edited by Prof. William Marias Malisoff. Pp. 579. (New York: Philosophical Library, Inc., 1943.) 7.50 dollars.

THIS 'dictionary' is a new and interesting venture and it is illustrative, perhaps, of the remarkable progress of biochemistry during recent years that such a dictionary should even have been contemplated. No one now would, I think, question that there is room in the literature for a book which will define clearly biochemical terms, give references to key papers dealing with investigations on the manifold aspects of biochemistry, describe succinctly biochemical laboratory tests in current use and, above all, give brief and accurate accounts of the present position of a large variety of biochemical topics. The task of producing such a book must indeed be formidable, for the greatest care is required to secure a balanced treatment of the topics and not to give undue importance to subjects and terms of little or fleeting importance, to insert only what is relevant to biochemistry and to omit the trivial.

Much care and thought clearly have been expended on the compilation of this dictionary, which does its best to steer a middle course between a glossary of terms and an assembly of review articles. Several thousand terms have received attention, and a large number of chemical tests of more or less importance in biochemistry have been described. The terms cover the field of biochemistry and invade neighbouring fields of anatomy, physiology, botany and zoology. The list of biochemical tests in current use is fairly comprehensive but by no means complete. For example, a description of the familiar Rothera test for acetoacetic acid is missing, nor does there seem to be an adequate description of current tests for thiol compounds. Moreover, the tests which are described often lack experimental detail so that little use can be made of them. Inclusion of references in all tests is obviously a necessity.

Certain topics are distinguished by having signed semi-review articles allotted to them. Thus amino-acids are dealt with by Van Slyke, autolysis by Bradley, carbohydrate metabolism by Barker, respiration by Gerard, cellulose decomposition by Norman, etc. Unfortunately, there is only a small number of such authoritatively treated articles. Further, the topics dealt with in this manner are ill-balanced in treatment, some topics receiving ten pages or more of discussion while others, equally interesting to the student of biochemistry, are discussed in a few short paragraphs. Many important topics receive the scantiest consideration. Thus the subject of glycolysis, which is certainly worthy of detailed treatment in a dictionary of biochemistry, is dismissed in a phrase: "Breakdown of sugars in body". This is scarcely compensated for by the article on carbohydrate metabolism, which only touches upon the chemical mechanisms of carbohydrate breakdown in the cell. Should the reader look up the term 'fermentation', he would be directed to 'microbiology', under which term he would certainly learn little of fermentation. 'Fat metabolism' receives sketchy treatment in an article on "Carbohydrate and Fat Metabolism and their Reciprocal Integration" by Witzmann.

The main body of the dictionary is taken up with definitions, cross-references and short descriptions, some of which are good, some very good, and others too poor to be regarded as of informative value. The reviewer also feels a definite dislike to the inclusion in a biochemical dictionary of such abbreviations as ADP, ATP, TPN, GSH, etc., which while useful in a scientific article (where they are defined) as leading to economy of space, cannot yet be regarded as internationally accepted symbols of the substances they represent.

Considerable cutting of the irrelevant material, inclusion of many more authoritative and comprehensive articles on the more important aspects of biochemistry, attention to the inclusion of key references and constitutional formulæ (which are mostly conspicuous by their absence) and elimination of descriptions of chemical tests not in general usage, would make this dictionary far more valuable and acceptable to the student and to the research worker.

J. H. QUASTEL.