tains, vast though this be, but rather in its wholly enlightening effect upon the search for biologic truths, and for this alone it is worthy of deep study and a lasting place in literature.

LOUIS AGASSIZ FUERTES

Einführung in die Physiologie der Einzelligen (Protozoen). By S. VON PROWAZEK. Leipzig and Berlin, B. G. Teubner, 1910. Pp. 172.

Ever since the appearance of Verworn's excellent paper on the psycho-physiology of the protozoa in 1889, it has been the hope of many that in these supposedly simple organisms a key would be found to the solution of various perplexing problems in the higher forms; that physiological and psychological processes as well as structures would be discovered here in their very inception. Unfortunately this hope has not been realized. The life processes in the unicellular forms have been found to be exceedingly complex. Even the anatomy is far more complex than was formerly supposed. As a matter of fact the more thorough the investigation, the more intricate and involved the physiology and structure of these apparently simple creatures is found to be. Our author, realizing this, says that a protozoan "is in a certain sense a unicellular metazoan," and the establishment of this idea, he asserts, is the underlying motive of the volume under consideration.

This volume, as the title indicates, is intended to serve as an introduction to the physiology of the unicellular forms. The author says it is not a hand-book. In reality, however, it takes the form of a hand-book and might truthfully be called a very brief review or statement of results of original work bearing on all functional processes in unicellular forms. The principal topics discussed follow in the order of presentation: The structure of the cytoplasm and the nucleus, both physical and chemical; The nature and function of the surface membrane or layer and various organic bodies within the cell; Respiration; Process of feeding; Excretion; Motion and locomotion; Fertilization; Regeneration; Protection; Immunity; Responses to chemicals, electricity, light, etc.; Inheritance; Variation, and Mutation.

While the results of investigation bearing on some of these topics are fairly conclusive and present some coherence, those bearing on others are quite the opposite and the author's treatment of these necessarily consists mainly of a series of dry incoherent statements of experimental results of interest only to those who are in search of a brief account of the work done and the references to such work.

In general the author's selection and review of papers and his discussion appear sane and trustworthy. He usually presents the literature bearing on both sides of mooted questions without taking a definite stand himself. However, as might be expected in a subject as new as the physiology of the unicellular forms, he supports some conceptions which in the minds of many are erroneous. Among such may be mentioned (1) the idea that the movement of certain amœbæ can be accounted for by the effect of the environment on surface tension; (2) the idea that the activity and form of organisms is regulated by a non-energetic principle, an entelechy or a psychoid as described by Driesch; (3) the idea that unicellular forms orient and move directly toward or from a region containing certain chemicals or having a given temperature; (4) the idea that there is no selection of food in the protozoa; (5) the representation of the eye-spot of *Euglena* as a hollow cylinder.

The volume in question will no doubt be found valuable principally as a book of reference. Unfortunately, however, it is not well adapted for this use, owing to the very brief table of contents and the absence of an index, and to the fact that the titles of the papers cited are scattered through the body of the text making it difficult to locate the references referred to. Moreover, the frequent interruption in the text by titles which in many instances appear again and again annoys the reader.

S. O. MAST.

SCIENTIFIC JOURNALS AND ARTICLES

The Journal of Biological Chemistry, Vol. VIII., No. 2, issued August 29, contains the