

are themselves free—living cells. The cell must, therefore, be the seat of those events, the expression of which is life." "The cell is a bit of protoplasm containing a distinct nucleus."

"What is called life is a series of vital phenomena very unequal in importance." These vital phenomena are divided into three groups, and are associated with changes of substance, of form, and of energy. The changes of substance are due to assimilation and dissimulation, or, in other words, to the process of metabolism.

Chapter four is given up to a discussion of the "General Conditions of Life." The general external conditions of life are food, water, oxygen, temperature, and pressure. The "Origin of Life Upon the Earth" is considered in this chapter, and it forms one of the most entertaining parts of the book. Four theories concerning the origin of life upon the earth are brought under consideration: 1. "The Doctrine of Spontaneous Generation." 2. "The Theory of Cosmozoa," or the theory that life has always been transferred from one world to another. "Starting from the idea that small, solid particles are moving about everywhere in space, and in the rapid flight of the heavenly bodies are continually being stripped off from them, Richter assumes that, at the same time and attached to these solid particles, germs of micro-organisms capable of life are also continually being thrown off from such heavenly bodies as are inhabited, and carried to others." "Organic life, therefore, has never originated, but has always been transferred from one world to another." 3. "Preyers' Theory of the Continuity of Life." "We do not say, therefore, that protoplasm as such existed from the beginning of the earth's formation; or that without beginning it wandered as such from elsewhere out of space to the cooled earth; or, still less, that without life it became compounded upon the planets out of inorganic bodies, as spontaneous generation would have it; but we maintain that the movement that exists in the universe without beginning is life." 4. Pfüger's Idea." "It is seen how strongly and remarkably all facts of chemistry point to fire as the force that has produced by synthesis the constituents of proteid. In other words, life is derived from fire, and its fundamental conditions were laid down at a time when the earth was still an incandescent ball."

A chapter on "Stimuli and Their Actions" and a concluding one on "The Mechanisms of Life," brings this interesting and instructive book to a close. It is a book that is sure to be prized by the progressive medical practitioner. While many of the author's conclusions and inferences may be open to criticism, still the work is written in a scientific manner, and is a distinct and valuable addition to the literature of physiology.

A. E.

*A Text-book of Pharmacology and Therapeutics, or the Action of Drugs in Health and Disease.* By ARTHUR R. CUSHING, M.A., M.D. Philadelphia and New York: Lea Bros. & Co.

This is an exceedingly good work, and the author has succeeded in compiling a book which every physician and student should possess. Each drug is systematically classified, and its preparation shortly and concisely described, followed by its therapeutical action in fuller detail. The author's classification differs somewhat from the current works on this subject, and has, in my opinion, been carefully considered. The first part is devoted to organic substances, which are characterized chiefly by their local action, as demulcents, emollients, etc. The second part describes organic substances characterized chiefly by their action after absorption, as alcohol, strychnia, opium, etc. Part three treats of combinations of the alkalies, alkaline earths, acids, and allied bodies. Part four, of the heavy metals. Part five, of ferments, secretions, and toxalbumins, while the sixth, or concluding part, is devoted to menstria and mechanical remedies. This mode of classification makes it an excellent work for quick reference. We are particularly well pleased with the thorough manner in which the physiological action of the more powerful drugs are described. This is most essential to the practitioner who has to rely on the experimentalist for his knowledge, and the author has been most careful and painstaking in his laboratory experiments. The book is printed on good paper, with an excellent