plement but not to greatly duplicate the more biochemical treatments which are available in other monographs.

It is frankly a text-book for the advanced student, for one who already has a strong background of descriptive organic chemistry, and is designed for instruction at the graduate level. As such a text it merits and will unquestionably receive wide adoption. In many instances the material in a single chapter is nowhere else available in monograph form, so that from the standpoint of time-saving alone the student of theoretical organic chemistry should be enormously assisted by possessing these volumes. Furthermore the text gives every evidence of a careful sifting of the literature by one who has himself worked in that special field so that much of the dross has been sifted out in the process of compilation.

Volume I deals with organic theory and includes a consideration of Alicyclic Compounds and the Theory of Strain; Theory of the Structure and Reactions of Aromatic Compounds; Stereoisomerism; Organometallic Compounds; Free Radicals; Unsaturation and Conjugation; Open-Chain Nitrogen Compounds; Molecular Rearrangements; and Comparison of Chemical Reactivity.

Volume II contains four chapters closely allied to those in Volume I, *i.e.*, Modern Electronic Concepts of Valence; Constitution and Physical Properties of Organic Compounds; Rotatory Dispersion; and The Significance of Resonance to the Nature of the Chemical Bond and the Structure of Molecules, and in addition nine chapters dealing with natural products, Natural Amino Acids; The Chemistry of Pyrimidines, Purines, and Nucleic Acids; Alkaloids; The Anthocyanins and the Flavones; Carotenoids: The Polyene Pigments of Plants and Animals; The Sterols, Bile Acids, and Related Compounds; and Chapters 16, 17, and 18 on the carbohydrates. As already noted, the approach of all of these natural-product chapters is that of the organic chemist, although there is considerable biochemistry and some biology interwoven into certain of the discussions.

The editorial board is to be congratulated on the high standard of excellence maintained for the individual chapters. The volumes are highly recommended for adoption as an advanced text. They should be on the study desk of every teacher of organic chemistry and of every advanced student of chemistry. Even those whose interest lies wholly in physical chemistry will find here much that will interest them.

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THE ORIGIN OF LIFE

The Origin of Life. By A. I. OPARIN. Translated by Sergius Morgulis. Macmillan, 1938.

IN this book a biochemist brings chemical evidence to bear on the subject of the origin of life. It is, of course, impossible for him to prove his theory; but taking into consideration several organic and physico-chemical facts, a well-knit story is told.

Without going into details, Professor Oparin is against any theory which is based on some "sudden" generation of life; nor is he more favorably disposed towards Schafer's conception that life-giving, organic substances are constantly being evolved from inorganic material. Nor, indeed, does the author feel that there is any absolute difference between the "lifeless" and the "living." He discards completely the conception of a "vital energy." At some dim and distant period in the history of the world, when a gaseous mass separated from the sun and became the earth, certain "matter" began gradually to evolve until a simple primary organism was formed. During such untold years carbides were transformed to hydrocarbons, the latter gave rise to alcohols, aldehydes and organic acids, and, in the presence of ammonia, to amides, and, in the presence of water, high molecular organic compounds, including proteins, appeared.

Colloids representing complex organic molecules were first uniformly distributed in solution; these then separated into "semi-liquid, colloidal gels" with an all-important spatial arrangement within their molecules. The colloids grew; and such "colloidal systems with a highly developed physico-chemical system" gave rise to the simplest primary organisms.

The book has to be read to follow the many lines of argument. It is a stimulating product. Neither can one overlook the translater of the text, who has done an excellent job in a difficult field.

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SOCIETIES AND MEETINGS

THE ILLINOIS STATE ACADEMY OF SCIENCE

THE thirty-first meeting of the Illinois State Academy of Science was held at Southern Illinois State Normal University, Carbondale, on May 6 and 7. At the general session on Tuesday morning, President Roscoe Pulliam, of the Southern Illinois State Normal University, gave a short address of welcome. The members of the academy then listened to the address of the retiring president, Professor Harold R. Wanless, of the University of Illinois, who talked on the subject, "Geological Records of a Rhythmic Nature."