some seeds was found to have a higher initial titer against one strain of *Apl. stewartii* than against another. In other cases, the same degree of lysis was demonstrated against both strains. In a few instances the extract contained a lysin effective against one strain only.

The lytic substance from seeds was usually not effective in as high a dilution as the lysin from fire blight canker. The latter had been in association with its test organism much longer than the former.

ROY C. THOMAS

OHIO AGRICULTURAL EXPERIMENT STATION,
WOOSTER

GRAZING IN RELATION TO THE CONTROL OF LEAFY SPURGE

EXPERIMENTS conducted the past summer (1937) at this station have demonstrated that sheep will eat leafy spurge (*Euphorbia virgata* Wldst. and Kit.), and keep it under control. Two one acre plots were enclosed with woven wire and on July 2 four ewes and five lambs were confined on each plot. A similar lot of sheep was allowed to run at large in the pasture. The sheep used were of western origin and had been grazing a spurge infested pasture since early spring. The animals were weighed at the beginning of the experiment and at frequent intervals during the summer. Shelter, water and salt were provided. One plot was mowed and raked and the other left unmowed. The plots were in a pasture, the vegetation of which consisted chiefly of a mixture of spurge and bluegrass in a fairly uniform stand. Accurate counts indicated that there were on an average 370 stalks of spurge ranging from 12 to 30 inches tall and mostly in blossom or forming seeds and 298 small clumps of blue grass per square meter.

On August 2 the sheep on the mowed plot were removed because of lack of forage. Weights taken on this lot indicated that the ewes had lost an average of 14.1 pounds (a not unusual loss of weight in ewes with lambs) and the lambs gained an average of 13.0 pounds.

On August 12 the sheep in the unmowed plot were given access to both plots until September 24. On this latter date the ewes had lost an average of 17.5 pounds and the lambs had gained an average of 28.5 pounds.

The sheep given the run of the regular pasture showed a gain of ¼ pound per ewe and 26.25 pounds per lamb on September 24.

The experiment terminated on September 24 and at this time the spurge stalks were almost completely stripped of leaves, flowers and seeds. Practically no new growth of the weed was evident. The blue grass was also eaten off close to the ground.

The results reported above are at variance with these reported by other workers. Bakke,[1] in Iowa, reports little success with this method of control for spurge and states that according to Esser[2] this weed is poisonous to animals. In our trials the sheep ate the weed quite readily and in no case were any harmful effects noted.

Studies will be continued this summer in order to secure data on survival and the effect of grazing on root reserves. Further studies on the carrying capacity of the spurge will also be made.

E. A. HELGESON
E. J. THOMPSON

NORTH DAKOTA AGRICULTURAL EXPERIMENT STATION

SCIENTIFIC BOOKS

ORGANIC CHEMISTRY

Organic Chemistry—An Advanced Treatise. HENRY GILMAN, editor-in-chief, assisted by ROGER ADAMS, HOMER ADKINS, HANS T. CLARKE, CARL S. MARVEL and FRANK C. WHITMORE. 2 volumes, lvi + 1890 pp. John Wiley and Sons, New York, 1938. $15.00. (Sold separately, $7.50 per volume.)

TEXT-BOOKS often fall into a stereotyped pattern which persists for many years until some new author creates a new mold which in its turn becomes a model for later books. The traditional "organic chemistries" have for years been molded along quite similar lines. The present volumes are a sharp break from this tradition, and in that respect alone are almost unique in the text-book field.

These volumes comprise in reality a series of twenty-two short monographs bound together. There is no essential interrelationship between most of the individual chapters. One chapter does not logically lead to another, but each is an entity in itself. This is necessitated by the fact that each chapter is written by a specialist, or by a small group of specialists, competent to speak with authority in that special field.

The work may be divided into three major subdivisions dealing respectively with the theory and nature of reactions in organic chemistry, the relationships between physical properties and the structural constitution of organic molecules, and a series of chapters dealing with some of the more important naturally occurring organic compounds. In the case of this latter group of chapters, the approach is largely from the standpoint of the organic chemistry which is involved so that these chapters tend to sup-

[1] A. L. Bakke, Ia. Ag. Exp. Sta. Res. *Bull.* 222, 1937.
[2] P. Esser, "Braunschweig." 1910.

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.

ROSS AIKEN GORTNER
UNIVERSITY OF MINNESOTA

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.

BENJAMIN HARROW
CITY COLLEGE,
COLLEGE OF THE
CITY OF NEW YORK

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."