leading scientists. The terribly destructive rains of 1925, followed by conspicuous, yet less marked phenomena in 1932 and 1939, have lent further support to this theory. But the unexpectedly heavy precipitation of January, February and March of last year, with its direct and indirect effect upon sea and animal life which I observed at the time of the Lima Assembly of the Pan American Institute of Geography and History, apparently has not been noted in scientific literature.

A subsequent search into the scattered and scanty records of known periodic changes in the Humboldt Current has not yielded satisfactory results. The most illuminating record of Peruvian rains, which I have seen, appears in an article entitled "Las Lluvias en Piura,"[1] which summarizes the rains over a hundred-year period. There were six dry intervals of three years each, two of four years each, one eleven-year interval, one nine-year interval, one six-year interval, six two-year intervals, at least twelve one-year intervals and five periods of two or more successive wet years. The most thorough investigation of this region in the 'twenties and 'thirties has been made by Dr. Robert Cushman Murphy.[2]

The earlier records relating to the wet and dry cycles off the Humboldt Current area are probably not so carefully made as the data of the past fifteen years. A lamentable absence of adequate reporting stations is obvious. Yet surely, the rains of 1941 have disproved the existence of the reputed seven-year cycle.

ELIOT G. MEARS

QUOTATIONS

SCIENCE AND WAR

IN the magazine SCIENCE Dr. Peter L. Kapitza, a physicist whose name is identified with brilliant efforts to reach absolute zero, reviews the work done by Russian scientists to improve weapons and to find substitutes for much needed importations. His story parallels that which has been told by American and British scientists. If it departs from the familiar pattern it is because of its insistence on the highly practical character of Russian scientific research. Since science must serve the state in Russia, it has concerned itself with discoveries that can be applied in the factory, on the farm and in the hospital. Though this policy has made it difficult for the theorist to thrive, it is now bearing fruit in the form of highly efficient airplanes, improvements on old surgical procedures and the better utilization of raw materials. Here and in Great Britain it was necessary to mobilize science for the war effort. Russian science was mobilized by the state from the very beginning, so that the change from peace to war research was easy.

Scientists deplore war not only because it diverts attention from the urgency of problems which, if solved, would conquer baffling diseases and shed much needed light on the structure of the universe, the nature of matter, the mystery of life, but also because it exploits science. Dr. Kapitza strikes a different note. As he sees it, science derives much inspiration from war. He makes much of the Haber process for synthesizing ammonia—a process which not only enabled Germany to stave off defeat during the last war but which gave her fertilizers. He might have gone farther. The laws of gravitation were derived from ballistics as much as from swinging pendulums. Studies of the gases liberated when guns are fired gave both chemistry and physics an enormous impetus. Blood banks and the control of typhus came out of war, and so did some of the new techniques for operating on the brain and for repairing head injuries.

It is worth noting that the only institutions where science was systematically taught during the eighteenth century were the artillery schools of France; that the heavy chemical industry was created when Leblanc met an urgent wartime need for soda; that the earliest sewing machine, that of Thimmonier, was first used in making uniforms; that synthetic rubber, synthetic gasoline and the whole coal-tar chemical industry were developed by Germany with an eye on the inevitable British blockade. What gains science may make as the result of the present war no one can predict with certainty. Already it is clear that new plastics of startling properties will be developed, that a healthy synthetic rubber industry will be established, and that new synthetic drugs will take the place of those which we have hitherto extracted from imported plants.—*The New York Times* for April 19.

SCIENTIFIC BOOKS

ORGANIC CHEMISTRY

The Chemistry and Manufacture of Cosmetics. By MAISON G. DE NAVARRE. xix + 745 pp., with numerous illustrations and tables. New York: D. Van Nostrand Co., Inc. 1941. 8.00.

THE book opens with a Foreword by Dean Roland

[1] *Boletin de la Sociedad Geografica de Lima,* Tomo IV, 1894.

[2] *Geog. Rev.,* 16: 26–54, 1926, and 29: 1–33, 1939.

T. Lakey, of Wayne University College of Pharmacy, and concludes with a chapter by Ralph J. Mill on the Federal Food, Drug and Cosmetic Act of 1938 as it relates to cosmetics.

As both a text and a reference work, it should be valuable to all interested in its field, whether as students, technicians, sales organizations or manufacturers. It does not aim to be a cookbook or formulary, but to supply the basic information which will enable any intelligent individual to work out his own formulas, and produce cosmetics which shall serve some useful purpose, be entirely non-toxic and stable, with potent sales appeal, and complying with existing municipal, state and federal regulative legislation.

As the author points out, in the case of both perfumes and cosmetics, what would seem to the layman like wholly negligible infinitesimal minutiae often have a great and wholly unsuspected influence upon the character of the final product. This applies not only to its physical appearance and character, but in highest degree to variations in odor, because our marvelous olfactory equipment is such an extremely delicate analytical instrument. Since nature never standardizes her products, which vary from season to season, with variations of soil, climate, temperature, rainfall, fertilizer, etc., the duplication of results is much more difficult with natural than with synthetic products. The activities of scientists, particularly the organic chemists, are constantly making available new substances of immediate value to the cosmetic industry.

In the Introduction, cosmetics are divided into creams, lotions, powders, make-up, soaps and miscellaneous. Each of these in turn is subdivided into various types. Thus, there are three types of creams —cold creams, vanishing creams and waterfree creams; three of lotions—non-alcoholic with gum, strongly alcoholic with no gum and mildly alcoholic; two types of powders—face powder and miscellaneous; two of soaps—shaving cream and shampoo; four of make-up—eye, lip, cheek and entire face; and miscellaneous types include permanent wave, dental, depilatory, bath, mask, manicure and suntan.

The subject matter of the volume is arranged in ten parts (or chapters). Part I deals with metrology and alligation; Part II with the equipment for small manufacture and cosmetic materials; Part III with fundamental chemical, bacteriological and mycological problems; Part IV with preservatives, antioxidants, corrosion, etc.; Part V with cosmetic colors; Part VI with emulsions; Part VII with the detailed description of the different types of creams, lotions, powders, etc.; Part VIII with the physiology of the skin, scalp and hair; Part IX with the Federal Food, Drug and Cosmetic Act of 1938, as mentioned above; and Part X contains the Appendix (supplementary illustrations, tables and other data), Bibliography and Index.

The usefulness of the book is greatly enhanced by numerous cosmetic formulas, patent digests, illustrations, tables, extensive bibliographies and frequent literature references throughout the text. It is a cyclopedia of information about a business as old as man himself, and which at least the female part of our population will undoubtedly still insist constitutes an "essential industry." Paper, presswork and binding are excellent.

A Brief Course in Organic Chemistry. A Combined Text-book and Laboratory Manual. By REYNOLD C. FUSON, RALPH CONNOR, CHAS. C. PRICE and H. R. SNYDER. x + 248 pp. 6 × 9¼ in. New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd. 1941. $2.50.

INASMUCH as three of the authors are members of the chemistry staff of the University of Illinois, and the fourth (Connor), although now at the University of Pennsylvania, was trained at the same institution, this book presumably reflects the considered judgment of representatives of one of the best-known and most distinguished departments of organic chemistry in our country. As such, it merits and will receive from other organic chemists a cordial welcome and a careful consideration.

One of the major problems in the preparation of a "brief" course in organic chemistry is the immense amount of material from which the selection must be made, and the improbability that all organic chemists will agree on all the details, either as to the topics chosen or the order of their arrangement. For example, in the matter of the sequence of the chapters, the reviewer feels that, based upon structural considerations, the phenols should follow the alcohols, and the carbohydrates and quinones the aldehydes and ketones, before taking up the acids, amines, amino acids and proteins. The joint authorship of the book under review indicates that four leaders in the field have together worked out the problem, to their own satisfaction at least, and this in itself should carry weight with those considering its adoption for use in introductory lecture and laboratory courses.

As the authors state, "this text has been developed in conducting courses for students of agriculture, home economics, veterinary medicine, pre-dentistry and pre-medicine." The plan of presentation is to introduce as early as possible fundamental concepts and the more important types of compounds, in order that the beginner may acquire a working knowledge of the language of organic chemistry, an early mastery of the elements of the subject and a rapidly increasing grasp of the scope and character of the field.

As stated in the title, the volume is both a lecture

text-book and a laboratory manual. The first 183 pages, covering the lecture portion, is followed by 52 pages of Laboratory Directions and Experiments.

The chapters discussing the theoretical side are devoted, in this order, to (I) Methane and its Derivatives, (II) Saturated Hydrocarbons, (III) Unsaturated Hydrocarbons, (IV) Aromatic Hydrocarbons, (V) Alcohols, (VI) Ethers, (VII) Aldehydes, (VIII) Ketones, (IX) Acids and Derivatives, (X) Optical Isomerism, (XI) Carbohydrates, (XII) Amines, (XIII) Amino Acids and Proteins, (XIV) Phenols, (XV) Quinones and (XVI) Heterocyclic Compounds. These chapters are followed by two dealing with some of the outstanding industrial developments of organic chemistry: (XVII) Industrial Developments in Aliphatic Chemistry and (XVIII) Coal Tar Products. A chapter (XIX) is then assigned to Structure and Valence, and one (XX) to Natural Products.

In the experimental portion, after general laboratory directions, discussions of melting points, boiling points and crystallization, 23 experiments are described in detail, for the preparation of individual or groups of organic compounds, or a study of their reactions, each of these experiments concluding with a list of suggestive and helpful questions. The particular experiments given were selected with special reference to the interests of the groups of students for whom the book is primarily intended.

The scientific repast it offers to beginners is assuredly most attractive and, in those who partake, should arouse a keen appetite for more courses from the same cuisine.

Paper, presswork and binding are excellent.

Organic Analytical Reagents. By JOHN H. YOE and LANDON A. SARVER. ix + 339 pp. New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd. 1941. $4.00.

THE authors explain that their purpose in writing this book was to furnish an up-to-date bibliography on organic analytical reagents and, based upon the literature thus assembled, to discuss the theoretical aspects of the subject and to suggest further research in this important field.

One of the most promising sources of new and valuable analytical reagents certainly exists in the vast number and illimitable variety of organic compounds. In that domain are to be found specific and highly sensitive reagents for gravimetric, colorimetric and nephelometric determinations; primary standards and indicators for volumetric analysis; pH indicators, buffers, protective colloids, flocculating agents, oxidizing and reducing agents, etc.

The volume consists of two parts. Part I is descriptive and theoretical. Part II consists of Glossary, Bibliography and Index. In Part I, the organic analytical reagents are classified into solvents and wash liquids, substances used in neutralizations, oxidizing agents, reducing agents, indicators, primary standards, acidic and basic salinogenic compounds, photometric aids and substances for the control of adsorption, diazotization and coupling agents, alkaloids and natural products.

First is given a list of all the compounds in each of these categories, arranged according to chemical character. This is followed by separate chapters for each (or several) of these classes, in which the appurtenant reagents are described seriatim and in detail, both as to their properties and their applications.

In Part II there is found a very helpful tabulation of all these various reagents, arranged alphabetically under each chemical element to which they apply, which elements likewise are printed in alphabetical order. This is followed by a Glossary of some 750 organic reagents, and a Bibliography of 2,419 titles. No laboratory procedures are included in the volume.

The book can be cordially recommended as a compact and useful reference work on organic analytical reagents. Paper, presswork and binding are excellent.

MARSTON T. BOGERT
COLUMBIA UNIVERSITY

REPORTS

FELLOWSHIPS IN SCIENCE AWARDED BY THE GUGGENHEIM FOUNDATION

EIGHTY-TWO John Simon Guggenheim Memorial Fellowships carrying awards amounting to $196,600 to American and Canadian scholars and creative workers have been announced. In making these appointments the trustees of the foundation adopted a resolution that all these fellows of the foundation should be informed that their use of their fellowships is subject to the requirements of any National Service for which they may be required; and the foundation's position is, further, that if any fellow is required for any National Service in a manner and of a kind such that his fellowship stipend would contribute to the war effort he may use the fellowship funds granted him while doing the work which the Government wants him to do.

This is the seventeenth annual series of fellowship awards by the foundation which was established and endowed by the late U. S. Senator Simon Guggenheim and by Mrs. Guggenheim as a memorial to their son John. More than 1,500 applications were received this year.

The fellowships are granted to research workers,