possesses. Any that are not obvious are, of course, the more unfortunate on that account.

Although they were published early in 1941, the "Recommended Allowances" of the National Research Council's Committee on Food and Nutrition (now Food and Nutrition Board) do not appear in Dr. Rosenberg's sections on "requirements." This omission not only impairs the value of these sections but illustrates further the unevenness of the book.

On the other hand, the sufficiently advanced and critical reader may find this book useful for its conveniently summarized chronologies, its many footnote references to original sources, its comprehensive compilations of the series of synthetic steps leading to industrial production of individual vitamins, and its extended listing of patents.

H. C. SHERMAN

ORGANIC CHEMICAL EXPERIMENTATION

Semimicro and Macro Organic Chemistry. By NICHOLAS D. CHERONIS. 388 pp., 63 illustrations, 12 tables, 40 pages of questions, 15 report forms. Thomas Y. Crowell Company. 1942. $2.75.

THIS laboratory manual, containing semimicro and macro methods of 70 organic preparations, constitutes the first systematic and practical application of semimicro methods of experimentation to general organic preparative methods. The author, beyond any doubt, demonstrated "that it is possible to attain all the objectives of laboratory practice in elementary organic chemistry, using the semimicro technic. In addition, this method offers the following advantages over the traditional method: (1) it permits better adaptation of the laboratory work to the varying needs of the students; (2) it teaches students greater care, cleanliness and manipulation; (3) it is more economical; and (4) it reduces substantially the seriousness of possible accidents since the quantities of reagents and size of equipment are only some 10 to 20 per cent. as great as with macro methods." The author also appears to have made the substantially correct observation that over-all application of the classical organic micro preparative methods of Behrens and Kley, Emich, and others, appear as yet not practical enough for general organic preparative laboratory practice and that for this purpose semimicro methods constitute the ideal solution, thus substantiating similar observations made by the reviewer in the teaching of qualitative organic analysis.

This laboratory manual, although still retaining one macro method for each procedure, must be heralded as a landmark in the field of organic chemical experimentation which may be expected to lead eventually to a complete replacement in the teaching of macro methods used heretofore in this field, thus paralleling the successes of semimicro methods in qualitative inorganic and of the micro methods in quantitative organic analysis.

JOSEPH B. NIEDERL
NEW YORK UNIVERSITY

AMATEUR SCIENCE

The Amateur Scientist: Science as a Hobby. By W. STEPHEN THOMAS. Pp. 291. New York: W. W. Norton and Company, Inc. 1942. $3.00.

As long ago as 1890 the writer and another boy in second-year high school arranged with a devoted teacher, who didn't consider her day's work over at four P.M., to remain after school and assist them in some simple chemical experiments in which they had become interested. They had never studied "high school chemistry." A very few years later, one of these boys continued his chemical studies by taking evening courses in the Massachusetts Institute of Technology. Eventually he became chief metallurgist in one of the laboratories of the General Electric Company. Probably few of the staff of university-trained chemists and metallurgists who served under him realized that he owed his position chiefly to the encouragement of a boy's spontaneous amateur interest in chemistry.

Doubtless instances similar to the above could be multiplied many times. One can never forget that the electrical process of making aluminum was discovered by a young man twenty-two years old, Charles M. Hall, whose boyish scientific interests were encouraged. For the advancement of science it is a fundamental thing to stimulate and encourage an interest in any aspect of science wherever it manifests itself, and especially in young people.

Dr. Frederick P. Keppel, while president of the Carnegie Corporation of New York, instituted an inquiry into methods of promoting an interest in science among amateurs, and a committee on organization, with Dr. Edwin G. Conklin as chairman, made a survey of the Philadelphia region. One result of Dr. Keppel's work was that the American Philosophical Society, at Philadelphia, cooperating from the beginning, appointed a Committee on Education and Participation in Science, with Dr. Conklin as chairman. This committee organized an executive staff with W. Stephen Thomas as executive secretary, on a full-time basis, beginning on June 1, 1939. This committee began to issue a series of bulletins on "Activities in Science in the Philadelphia Area." The bulletin for February 1, 1942, contained the disappointing notice that the work of the Committee on Education and Participation in Science had to be discontinued because Mr. Thomas had entered the Army.

Fortunately, however, before he terminated his work with the Philosophical Society, Mr. Thomas had prepared for publication a book of 291 pages, "The

Amateur Scientist: Science as a Hobby." The foreword is by Dr. Conklin. A certain number of copies have been distributed to various educational and scientific institutions by the Carnegie Corporation. The eight chapters of the book deal with Science and Ourselves, Science as a Hobby, Who is the Amateur Scientist?, The Amateur Scientist and the Community, Organizations of Amateur Scientists, Research and the Amateur Scientist, Sample Programs for Amateur Research, The Amateur Scientist and the Future.

The book sets forth the aims, methods and results, of a two and one-half years survey of amateur science in the Philadelphia region and the broader conclusions to be drawn from it—especially the great importance of encouraging people to be "scientifically-minded" when confronted with social, political and international problems, as well as with the problems of science. "Plainly," says the author, "the scientist is either indifferent to his relationship to the public or else he shies away from interpreting his findings to the layman for fear of being misunderstood."

The first chapter sets forth briefly how our daily lives are affected by modern science and notes how wide-spread is the amateur interest as indicated by studies made by the American Association of Adult Education. The second chapter discusses why laymen so often adopt one of the sciences as a recreational pursuit. The educational importance is stressed of having a program of public education that equips one not only for a vocation, but to spend his spare time with profit and interest—to live as well as to make a living.

One who might be inclined to question the value to science of encouraging the interest of amateurs, says the author, need only be reminded that Isaac Newton was a public official, Leewenhoek a Dutch merchant, Benjamin Franklin a printer, Sir William Herschel an organist, Priestley a preacher, Darwin a country gentleman, Mendel a monk, Fabre a village school teacher (p. 40). The situation in Philadelphia and vicinity is presented as a sample of what has been and is being done, but the book has a broad outlook and range, and is full of helpful suggestions for promoting and organizing the layman's interest in science. The Philadelphia program is worthy of careful study and imitation (with variations of course as to detail, etc.), and the book is to be commended to the careful attention of every one who is interested, not only in science, but in public education and public welfare.

C. STUART GAGER

BROOKLYN BOTANIC GARDEN

REPORTS

AUSTRALIAN COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH[1]

THE fifteenth annual report of the Council for Scientific and Industrial Research, Commonwealth of Australia, covers the year ended June 30, 1941, and includes the financial statement as well as lists of publications of the council and of the personnel of the council and its committees and the committees concerning work in which the council is cooperating.

A large part of the council's activities is now devoted to the solution of problems arising out of the war, and to assistance and advice to various government departments and other institutions and organizations which are concerned with that effort. This applies particularly to the National Standards Laboratory, the Aeronautical Research Laboratory, the Forest Products Laboratory and the Division of Industrial Chemistry. The reference to these activities is limited to brief general statements or omitted entirely.

Plant investigations have been concerned with native or naturalized plants as alternative sources of fiber, particularly as a substitute for jute, and investigations aimed at ascertaining the difference between the fiber from various Linum (flax) strains of good type or being continued. A survey is in progress to ascertain the position with regard to domestic supplies of vegetable and farm crop seed and methods of maintaining them. Weed investigations have shown that the St. John's wort can be virtually eliminated wherever subterranean clover can be grown successfully, but spraying with chemicals has failed to control an infestation of blackberry, and the work on both nutgrass (*Cyperus rotundus*) and mintweed (*Salvia reflexa*) has indicated that chemical sprays are of no value in controlling either plant. Field experiments on the control of take-all and the root-rot of wheat have continued at three sub-stations.

The work on the chemistry of tobacco at the University of Sydney was discontinued, as well as the study of disease resistance by the section of genetics. Work on the yellow dwarf disease, however, has continued actively, as well as investigations on smoking quality and physiological investigations. Fruit investigations have included an extension of the experiments on wax coatings for apples, and a reorganization to coordinate the wider attack on this problem organized by the division of food preservation. A re-examination and summary of the results of the work carried out in Tasmania on the brown-heart

[1] From *Nature*.