ably and when the book comes out he could appropriately name it "Metaphysics."

W. F. MAGIE

PRINCETON, N. J.

ANHYDROUS ALUMINUM CHLORIDE

Anhydrous Aluminum Chloride in Organic Chemistry. By CHARLES ALLEN THOMAS. In collaboration with Mary Baluk Moshier, Herbert E. Morris and Ross W. Moshier. American Chemical Society Monograph Series, No. 87. xiii + 972 pp. New York: Reinhold Publishing Corporation. 1941. $15.00.

AT last there is available a real encyclopedia of the manifold uses of anhydrous aluminum chloride in organic chemistry. Excellent monographs and review articles by Calloway, Groggins, Kränzlein, Montagne, Nenitzescu and others, have appeared within recent years, and have been most helpful, but nothing which has attempted to cover the field with the comprehensiveness and thoroughness of the present volume. Its author and his collaborators have rendered to all organic chemists a service which is sure to receive their grateful appreciation and sincere commendation. As the most complete and up-to-date handbook of the subject, it should be in the chemical library of every educational and research institution concerned with the field of organic chemistry, as well as of those corporations whose industries depend in any way upon the use of anhydrous aluminum chloride.

When "anhydrous aluminum chloride" is mentioned to an organic chemist, there rise instinctively and immediately before him the well-known and ubiquitous "Friedel-Crafts Reactions," and 378 pages of the volume are devoted to syntheses based upon such reactions. It is entirely fitting, therefore, that a portrait of Charles Friedel appears as the frontispiece, and one of James Mason Crafts upon page 76, and that a brief historical sketch (7 pp.) of these two distinguished chemists follows an excellent summarized and generalized introduction.

In addition to the pages occupied as noted above, separate chapters are devoted to the Physical Properties of aluminum chloride (45 pp.); the Mechanism of the Reactions Catalyzed by it (20 pp.); Addition Reactions (140 pp.); Aldehyde Syntheses; Aromatic Halogenation; Dehydrating Condensations (32 pp.); Dehydrogenation Condensations and Reduction Phenomena (20 pp.); Miscellaneous Condensations (20 pp.); Aromatic Rearrangements and Migrations (24 pp.); Effect of Aluminum Chloride on Aromatic Compounds (22 pp.); Aluminium Chloride in Aliphatic Chemistry (60 pp.); Polymerization (26 pp.); Aluminum Chloride in the Petroleum Industry (23 pp.); Preparation, Manufacture and Purification of Aluminum Chloride (24 pp.); and Notes on the Application of Aluminum Chloride (storage, transportation, particle size, etc.). In addition to complete author and subject indexes, there is an index of some 1,400 U. S. and foreign patents. References to the original literature appear throughout the text, the total number of such citations amounting to several thousand.

Paper, binding and presswork are up to the usual high standards of the publishers.

The two main purposes of the American Chemical Society Monograph Series are stated to be: (1) to present the knowledge available upon the chosen topic in a form intelligible to those whose activities may be along a wholly different line, to the end that other chemists may realize how closely their own investigations may be connected with other work which on the surface appears far afield; and (2) to promote research in the branch of science covered, by furnishing a well-digested survey of the progress already made, and by pointing out directions in which investigation needs to be extended. Both of these purposes are well served in this latest addition to the series.

MARSTON T. BOGERT

COLUMBIA UNIVERSITY

SCIENCE TWENTY-FIVE YEARS AGO

BOTANY AS A NATIONAL ASSET[1]

IN connection with the organization of the National Research Council, I feel that American botany is offered a great opportunity of which we should take advantage. As a member of the council I wish to acquaint you with its purpose, so far as botany is concerned. Since the organization of the council was stimulated by the desire to develop a program of national preparedness, the natural first impression would be that, so far as botany is concerned, it is merely the problem of more efficient food production and distribution. This would stamp the enterprise at once as a problem of practical agriculture, in connection with which botanical investigators who are dealing with the fundamental problems of plants would have little or no part. Nothing is further from the intention of the council. The chairman has recently outlined the work of the council briefly as follows:

[1] Concluding part of the presidential address before the Botanical Society of America, given in New York in December, 1916, and printed in the issue of SCIENCE for March 9, 1917.

1. To prepare a national census of research, showing what laboratories and investigators are available.
2. To encourage the cooperation of educational and research institutions in working out problems of pure science and industry.
3. To promote research in various branches of science in cooperation with leading national scientific societies.
4. To encourage scientific research in educational institutions. It is proposed, for instance, that in each advanced educational institution there be a committee on research to promote original investigations on the part of the faculty and graduate students.
5. To establish research fellowships in educational institutions, thus affording qualified workers an opportunity to devote themselves entirely to research work.
6. To secure wherever possible endowments for research purposes.

It is evident that so far from being primarily work in the practical application of what we know already, the enterprise is intended to be primarily a stimulus to fundamental research in every direction. It is not *practical application* that is to be stimulated chiefly, but *exploration,* which may or may not result in practical application. It is felt, for example, that the more we know about the structures and activities of plants, the better equipped we shall be to handle plants intelligently. Our botanical program, therefore, is simply to extend the boundaries of our knowledge of plants as far as possible. In pursuance of this program, at least two things are felt to be necessary.

In the first place, there must be developed some scheme of cooperation among our botanical establishments; and notably between the research establishments and the so-called practical establishments. For example, we recognize in general three great botanical agencies at work to-day, working independently, and in too great ignorance of each other's results. These agencies are the Department of Agriculture, the agricultural colleges and experiment stations, and the universities. All these agencies are investigating plants from various points of view, but they are not as mutually helpful or even as mutually stimulating as they should be in the interest of progress. I have met many cases of men intellectually equipped to work, but with no adequate material or equipment; and also even more cases of fine equipment and abundant material, and no man trained to use them effectively. In other words, the distribution of men and equipment is not as effective as it should be.

In the second place, there must be developed some plan of supporting research wherever there is a competent investigator. The movement to establish research fellowships has begun already, and as the value of research becomes better understood, there is no reason to doubt that every botanical explorer will have the opportunity to explore. There is at present a tremendous amount of waste in the investigators produced by the universities. Every year scores of young investigators, well equipped to continue exploration, are automatically side-tracked by a degree, and forced into positions where investigation is killed, or at least becomes anemic. The council proposes to conserve some of this investigative ability, and to give it a chance to express itself. In short, the opportunity now presented to us is to increase the opportunities for botanical research to such an extent by cooperation and conservation of investigative ability that the progress of botany should take on a greatly increased momentum. And all this can be done if at this psychological moment we as botanists can make it clear that a fundamental knowledge of plants is a great national asset.

THE LATE JOHN M. COULTER

REPORTS

THE AUSTRALIAN NATIONAL RESEARCH COUNCIL

IN October, 1940, the Australian National Research Council according to the *Australian Journal of Science* submitted proposals to the Prime Minister at his request, for a Scientific Advisory Committee on the lines of the Hankey Committee in Britain and the President's Scientific Advisory Committee in the United States of America. These proposals proved to be unacceptable, but an alternative arrangement was approved whereby the A.N.R.C. was to maintain close contact with the executive of the Council for Scientific and Industrial Research through a special representative. This arrangement was to be reviewed after twelve months.

As a result of the past year's experience the executive committee has made a request to the Commonwealth Government that it should authorize two men, selected for their knowledge of industry and science, to spend about three months examining the situation by consultation with leaders in industrial and other war activities. These two men would submit to the Prime Minister proposals for increasing the effective use of the country's scientific resources.

This proposal was first discussed fully with the Council for Scientific and Industrial Research, which has agreed to support the A.N.R.C. in this proposal.

The following is a brief review of some of the activities of the executive committee during the past twelve months.