adequate index and explanatory diagrams. As seen by a physicist, the book skirts the general principles of microscopic illumination and imagery with undesirable timidity: the nature of the diffraction phenomena could have been disclosed without too much mathematical labour and would have produced the confidence which goes with understanding.   H. J. J. BRADDICK

ANALYTICAL METHOD

The Determination of Epoxide Groups

By B. Dobinson, W. Hofmann and B. P. Stark. (Monographs in Organic Functional Group Analysis, Vol. 1.) Pp. viii + 79. (Pergamon Press: Oxford, London and New York, February 1969.) 42s; $6.

IN present day technology compounds containing epoxide groups have achieved many widespread uses. Naturally, the determination of the epoxide group is therefore an analysis which is much in demand. This small monograph surveys methods which are commonly in use and serves a very valuable purpose in doing so because of its critical approach. The authors refer extensively throughout the text to their own practical experience of the methods which they recommend and only give working details for those procedures which they themselves have used or feel to be really worth while. They are also always concerned to give details of interferences with the methods recommended and to indicate the other limitations and potential shortcomings. In these respects, I have nothing but praise for this slim monograph, which is the first in the series on "Organic Functional Group Analysis", edited by Anderson and Belcher. The monograph is, of course, for the practitioner of this type of analysis, but I do feel that the text would have gained some increase of clarity for the non-expert if the principles of the methods had been more clearly defined in a few brief sentences before the detailed consideration.

The introductory chapter surveys the chemical reactivity of many types of epoxide compound under a variety of conditions and stresses the influence of these factors on the choice of the analytical method. The second chapter discusses ring opening methods in which the halohydrin is formed quantitatively by attack from hydrochloric acid or hydrobromic acid. Usually the excess of hydrochloric acid is determined by titration with a standard solution of alkali or the ionic halide is determined by argentometric titration. The two hydrobromic acid methods are, however, direct. Chapter three surveys the nonacidic methods which use amines, thiosulphate, sulphites or the like, and also some oxidative and esterification procedures. Methods based on the absorption of infrared radiation are also discussed, but rather briefly and only in relation to their potential usage. The final chapter summarizes the authors' conclusions and assessments of the various methods in the space of four pages.

For those who have the special responsibility for this and related analysis, this is a useful and worthwhile little monograph.   T. S. WEST

LEAD CHEMISTRY

The Organic Compounds of Lead

By Hymin Shapiro and F. W. Frey. (The Chemistry of Organometallic Compounds: A Series of Monographs.) Pp. xiii + 486. (Interscience (Wiley): New York and London, July 1969.) 170s.

THIS volume is the second to appear in the series of monographs "The Chemistry of Organometallic Compounds". As the first ever monograph on such a scale devoted solely to organolead chemistry, it is a welcome addition

to my bookshelf; and few authors could be more qualified than Shapiro and Frey to write such a book.

There is a coverage of all possible topics in the field of organolead chemistry. Many chapters contain valuable comprehensive tables of compounds along with their physical properties and literature references. Each chapter has most adequate literature citations, and there are more than 2,200 references to the journal and patent literature.

The style of writing is very readable; and the book is, of course, a "must" for anyone associated with lead chemistry. It should also find extensive readership among organometallic chemists, and others associated with the petroleum, plastics and paints industries.

EDWARD ABEL

HARMONIC ANALYSIS

Distributions and Fourier Transforms

By William F. Donoghue Jr. (Pure and Applied Mathematics, Vol. 32.) Pp. viii + 315. (Academic Press: New York and London, June 1969.) 149s.

THIS is a textbook of modern analysis, with an emphasis on analysis in n-dimensional Euclidean space R^n rather than in an abstract topological space. The book reflects a current revival of interest in the more classical aspects of harmonic analysis, which has coincided with the development of tools capable of dealing with the more sophisticated properties of functions of n variables. One of these tools is the theory of distributions on R^n and in particular the theory of tempered or temperate distributions, which provides an elegant and unified treatment of the Fourier transform.

In this book, the author gives a very readable introduction to the theory of distributions, with particular reference to Fourier transforms, and applies this theory to various topics in harmonic analysis. The first quarter of the book reviews the material the reader is expected to know, and develops some topics in advanced calculus and analytic function theory which are required later. According to the author's preface, the reader is supposed to be familiar with the elements of real variable theory and Lebesgue integration, and to have some knowledge of analytic functions, but the final section of the book requires a wider background than this. The second part of the book, some 90 pages, covers the theory of distributions and Fourier transforms, and includes a proof of F. Riesz's representation theorem for subharmonic functions.

The remainder of the book is devoted to harmonic analysis. The topics covered in this last section are functions of positive type, the Paley-Wiener theorem, the Titchmarsh convolution theorem, the spectrum of a distribution and the Wiener Tauberian theorem, the Riesz convexity theorem, a theorem of Hörmander on translation invariant operators, Sobolev's theorem on the Riesz potential, and Bessel potentials. As an application of the Wiener Tauberian theorem, the author includes a proof of the prime number theorem, and he also includes the theorem of Beurling which shows that the Riemann hypothesis is equivalent to a completeness problem in $L^2(0,1)$.

The book provides a good introduction to a field of mathematical analysis that is of considerable interest at present, and it illustrates well the techniques involved. The book may also be useful to physicists and others as a source of information on the modern treatment of the Fourier transform. On the other hand, the usefulness of the book is considerably reduced by a very inadequate index and by a total absence of references. Only the names of the authors of some of the principal theorems are given, and there are no suggestions for further reading in any form.   T. M. FLETT