

Precipitate with 1 cc. of a 10% solution of barium chloride and let the mixture stand for at least one hour, after which the precipitated barium sulfate may be weighed on a micro Neubauer crucible. To prepare the crucible, wash it with chromic acid and water and then, after closing the crucible with the lid and lower cap, ignite it on a crucible cover and weigh when cool.

Filter the precipitate in the same manner as with a Gooch crucible in the macro method and again ignite and weigh the crucible as before. A few results are given in Table I.

TABLE I
PERCENTAGE OF SULFUR IN ORGANIC COMPOUNDS

Compound	Sample, mg.		BaSO ₄ , mg.		Sulfur, %		
	Calcd.	Found	Calcd.	Found	Calcd.	Found	Found
Cystine	4.472	7.039	8.516	13.412	26.06	26.15	26.16
Methyl orange	9.125	6.988	6.390	4.910	9.8	9.62	9.65
Aminonaphthol sulfonic acid	5.807	6.698	5.729	6.646	13.47	13.55	13.62
Thymol blue	8.230	8.698	3.960	4.185	6.87	6.61	6.61
Potassium methyl sulfonate	4.646	7.200	8.152	12.562	23.89	24.09	23.96
Sulfanilic acid	5.604	5.366	7.598	7.243	18.52	18.62	18.53

Summary

By this method the sulfur content of any sample can be determined very accurately. It requires very little manipulation and apparatus and is economical in respect to time and material.

KALAMAZOO, MICHIGAN

NEW BOOKS

Physikalisch-chemisches Praktikum. (Laboratory Manual of Physical Chemistry.)

By Professor Dr. K. FAJANS, and Dr. J. WÜST, of the University of Munich. Akademische Verlagsgesellschaft m. b. H., Schlossgasse 9, Leipzig C 1, Germany, 1929. xvi + 217 pp. 74 figs. 16 × 24 cm. Price, unbound, M. 12; bound, M. 13.50.

The outstanding feature of this laboratory manual is the great variety of experiments presented. In addition to the experiments commonly found in laboratory guides, we have here chapters on Adsorption from Solution, Coagulation of Sols by Electrolytes, Metallography, Rate of Radioactive Disintegration, Adsorption of Light, Ultraviolet Spectroscopy, Electrochemical Preparations and the Lead Accumulator. The experiments are not as formidable as this array of topics might suggest, being carried out for the most part with quite simple apparatus.

The experiments have been used at the Munich laboratory for the most part, the rest having been tested at Würzburg, Karlsruhe, or Erlangen. The volume contains sufficient material to occupy a student's entire time for one semester. Each chapter begins with a theoretical discussion, complete enough to enable the student to understand the experiment.

The apparatus is in most cases illustrated and carefully described, making the book in all as nearly self-teaching as one could wish.

The volume should be most welcome to those who are interested in introducing new material into the laboratory work in physical chemistry.

HENRY E. BENT

Leipziger Vorträge 1929: Dipolmomente und chemische Struktur. (Leipzig Lectures 1929: Dipole Moments and Chemical Structure.) Edited by P. DEBYE. S. Hirzel, Leipzig, 1929. viii + 134 pp. 35 figs. and 1 plate. 14.5 × 22 cm. Price, RM. 9.00.

The papers presented at Leipzig last summer, in the course of a symposium on the electric moments of molecules, have been reprinted in this volume, together with a short preface by Professor Debye. They form a stimulating account of the more recent applications of this magnitude to the problems of molecular structure. Those who are engaged in the measurement or in the interpretation of dipole moments will find numerous points of interest in Sängner's report of the investigation of further compounds by means of a study of the temperature change in the dielectric constants of their vapors, in Estermann's description of the method of molecular rays and in the measurements of the dielectric constants of dilute benzene solutions of heptane derivatives reported by Errera and Sherrill. The specialist in this field will also be interested in the papers of Errera on the changes of the polarization of polar substances with concentration and temperature, on molecular associations and on the atomic polarization of crystals. The ultraviolet absorption spectra of some disubstituted benzenes have been measured by Wolf, and Höjendahl has given a discussion of the forces in regular crystals.

Of much more general interest to chemists, however, are the applications to chemical problems. Perhaps the greatest advance has been made in relating the dipole moment to the structure of the molecule. Errera has given a full discussion of this subject showing, in particular, how the electric moment may be used for the identification of isomers. In a paper by Ebert the fundamental postulates of organic chemistry are analyzed in the light of recent physical experiments. The relation between the Kerr effect and the molecular structure has been discussed by Wolf, and the possible means of attacking the problems of reaction velocity from a consideration of the polar properties of the molecules have been developed by Hückel. The attitude of the theoretical physicist toward the problem as a whole is given by Hund.

Taken as a whole the book affords a ready means by which chemists may familiarize themselves with this relatively new method of investigation and with the results that have been obtained by its use. Admittedly these results are as yet meager, but it may be hoped with a fair

degree of confidence that they will be greatly extended in the near future. The articles collected in this volume contain much that shows the necessity for further work along these lines.

HUGH M. SMALLWOOD

The Chemical Effects of Alpha Particles and Electrons. By SAMUEL C. LIND, Ph.D., Director of the School of Chemistry, University of Minnesota. Second edition. American Chemical Society Monograph Series. The Chemical Catalog Company, Inc., 419 Fourth Avenue, New York. 252 pp. 13 figs. 15 × 23.5 cm. Price, \$5.00.

The success of the American Chemical Society Monograph Series is evident from the long list of those published, but the most striking proof is the issuance of successful revised editions of those scholarly earlier monographs which probably would not have been published at all without the aid of the American Chemical Society. Dr. Lind has brought his book up to date by omitting the sections on isotopes (in deference to Aston's monograph), by expanding to eleven chapters the four devoted to kinetics and the relationships between radiochemical effects, and by a careful revision of each paragraph to accord with the intervening research results. Since the first edition was itself the stimulant for a large part of this research, the result is a much more unified and clearer presentation. The thirty per cent. increase in size constitutes obvious justification for the first edition as well as for the second.

G. L. WENDT