CHEMISTRY

Chairman: J. L. Riebsomer, DePauw University

Professor K. N. Campbell, University of Notre Dame, was elected chairman of the section for 1942.

ABSTRACTS

Determination of oxygen in organic compounds. Philip J. Elving and Waldo B. Ligett, Purdue University.—Oxygen in organic compounds is universally determined by difference, being calculated on the basis of the other determined constituents. This practice not only throws the sum of all the errors in the other determinations on the value calculated for oxygen but renders impossible the checking of the analysis by summation. In recent years, therefore, attention has been directed to the problem of the direct determination of oxygen in organic compounds. However, no entirely satisfactory method has yet been devised. In this paper the various published methods of attack for the determination of oxygen are classified into a few divisions; the techniques employed are critically examined and possible successful methods of solving the problem are pointed out. Research pointing to a satisfactory method is described.

On the determination of the percentage of oxygen in the air. W. M. Blanchard and Merton Davis, DePauw University.—This communication was presented, not because it carries any new chemical knowledge, but that it might encourage those teachers of chemistry who believe in teaching science as far as possible by the experimental method. One of the earliest and most important subjects to be presented in elementary chemistry is the composition of the air. Five procedures are commonly followed in determining the percentage of oxygen in the air.

The method of absorbing the oxygen from the measured volume of air exposed to phosphorus pellets in a phosphorus pipette was illustrated by an actual experiment before those present. It is very rapid, taking only a few minutes, is quite accurate, and after the apparatus is once set up, may be used with class after class many times without further attention.

A safe and simple method of preparing phosphorus pellets. William M. Blanchard and Merton Davis, DePauw University.—This is a simple procedure by which yellow phosphorus, melted under a little hot water, in a round bottomed flask, is forced through a small glass tube, through a layer of hot water, resting on a cylinder of cold water, in which it solidifies as it breaks up into a number of pellets. This principle is that by which ordinary lead shot are made by dropping

melted lead through a sieve into cold water. Care is taken to protect the phosphorus from air at all times.

Systematic color nomenclature applied to inorganic qualitative analysis. L. P. BIEFELD and MARGARET GRIFFING, Purdue University.— A survey of the standard texts and references, used in qualitative analysis, revealed that no consistent color nomenclature has been adopted and that the color names used are so general that they do not adequately designate the colors. Most of the solids, encountered in the undergraduate course in qualitative analysis, have been compared to the Munsell Color Charts under standardized viewing and illuminating conditions. They have been assigned definite color names in accordance with the nomenclature system adopted by the Inter-Society Color Council in 1931.

Reaction of maleic anhydride with polymethyl naphthalenes. MILTON C. KLOETZEL, DePauw University.— 9, 10-Dimethylanthracene and 9-methylanthracene react more rapidly with maleic anhydride than does anthracene itself. It appears that substitution of methyl groups for hydrogen atoms in a diene may activate that diene towards maleic anhydride. Naphthalene has not been observed to undergo diene additions. It has now been found that 2, 3-dimethylnaphthalene gives a 35% yield of adduct when heated with thirty moles of maleic anhydride for twenty-four hours at 100°. This reaction provides another example of activation of dienes by methyl groups, and likewise confirms the presence of a diene system in the naphthalene nucleus. It may be predicted that 1, 2, 3, 4-tetramethylnaphthalene will react with maleic anhydride even more rapidly than does 2, 3-dimethylnaphthalene. Experiments to this effect are now in progress.

Problems of teaching quantitative analysis II. Students' laboratory records. M. G. MELLON, Purdue University, and D. R. MELLON, Youngstown College, Yonugstown, Ohio.—The general problem of preparing adequate laboratory records in quantitative analysis is considered, together with suggestions for acceptable forms and books, and a usable method of handling reports when submitted for inspection.