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A. P. Vinogradov, Editor

Editorial College: I. P. Alimarin, A. M. Dymov, G. S. Landsberg, M. B. Neyman, Ya. O. Parnas, V. M. Rodionov, [redacted] (Acting Editor), D. I. Ryabchikov (Scientific Secretary), I. V. Tananayev and V. G. Khlopin

All but one of the twelve articles in this 71-page issue are devoted to qualitative and quantitative analysis, with emphasis on the qualitative side. [redacted] The majority deal with specific substances, and only three of the eleven are of a general nature. The twelfth is concerned with structural analysis. Each article is followed by a bibliography.

Among the group reporting on detection of specific substances, "New Reactions on Rhodanides" by A. P. Kreshkov and S. S. Vil'borg of the Moscow Order of Lenin Chemico-Technological Institute imeni D. I. Mendeleyev, beginning on page 11, develops two new methods for detection. One is based on the formation of canarinic, pseudothiocyanic, hydroperthiocyanic, and isoperthiocyanic [redacted] acids during the evaporation of a rhodanide solution with a surplus of [redacted] potassium chlorate and subsequently heating the residue. In the other, a molybdenumrhodanide complex is obtained during the interactivity of a rhodanide solution with a [redacted] surplus of a saturated solution of ammonium molybdate in nitric acid (1:5) in the presence of small quantities of reducing agents. The compound thus formed has an orange-yellow color [redacted] and is separated with ether or amyl alcohol. Both of these reactions are

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sufficiently sensitive, do not require troublesome reagents and apparatus, and the detection is not hindered by iodides, acetates, and other sub- which do not permit the use of ferric salts as a reagent. Appended to this article, submitted April 24, 1947, is a bibliography of 19 references, two-thirds of them foreign.

"Physico-Chemical Analysis of Systems Important to Analytical Chemistry. XIII. The System [redacted] $CoSO_4$ - $K_4Fe(CN)_6$ - $H_2O$" (page 21) The authors, is concerned with the detection of cobalt. /I. V. Tananayev and M. I. Levina of the Laboratory of Analytical Chemistry of the Institute of General and Inorganic Chemistry imeni N. S. Kurnakov of the Academy of [redacted] Sciences of the USSR, studied the solubility (at 25°C) and light absorption of this system, and showed that the interaction between the ions of cobalt and potassium ferrocyanide proceeds through three stages with the formation of two binary salts [redacted] ($5Co_2Fe(CN)_6 \cdot K_4Fe(CN)_6$ and $4Co_2Fe(CN)_6 \cdot 3K_4Fe(CN)_6$) in solid solutions of varying composition. The cobalt was detected by [redacted] phototurbidimetric and ordinary titration methods, and the identity of the two salts was confirmed [redacted] roentgenographically. Eight references, the majority Russian, are listed. This work was submitted March 3, 1947.

A third [redacted] study of specific qualitative analysis, "Method for the Determination of Water Vapor and Oxygen in Gases not Containing Oxygen Compounds" by N. Shurmovskaya and L. Kupriyanova of the State [redacted] Scientific-Research and Planning Institute of the Nitrogen Industry, [redacted] relates to the determination of the amount of $O_2$ or $H_2O$ in $CO_2$, which is carried out in the following manner. Coal is gasified By means of the oxygen or water vapor to be determined and the resulting carbon monoxide is oxidized to carbon

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dioxide with iodine pentoxide. The carbon dioxide is measured by the change of conductivity, which it produces in a solution of barium hydroxide.





by the fluctuation of the electroconductivity of a caustic barium solution. This is done following the gasification of carbon with oxygen or water vapor, and the subsequent oxidation of the carbon dioxide with iodine pentoxide. This method has an average 5% margin of error for a 0.05-0.3% concentration of $O_2$ and less than that for lower concentrations of $O_2$.

Most of the ten references accompanying the article, (page 41) submitted May 10, 1947, are foreign.

Five additional articles deal with determination of specific substances. They are: "Determination of Selenium in Steel" by N. A. Tananayev and V. I. Murasheva of the Laboratory of Analytical Chemistry of the Ural Industrial Institute at Sverdlovsk, on page 3; "Volumetric Determination of Trivalent Iron with the Aid of Tartrates" by A. V. Pavlinova of the Chair of Analytical Chemistry of Chernovitsiy State University, page 7, submitted May 15, 1947; "Polarographic Determination of Small Quantities of Arsenic" by N. Ya. Khlopin, N. A. Rafalovich, and G. P. Aksenova of Molotov Pharmaceutical Institute and the Oblast Sanitary-Hygienic Laboratory, page 16, submitted Feb. 1, 1947; "Indication of Small Quantities of Halogen Derivatives of Hydrocarbons" by A. V. Pylayev of the All-Union Scientific-Research Institute of Labor Protection at Moscow, page 63, submitted Feb. 16, 1947; and "A Quick Method for Determining Sugars in Tanning Materials" by N. S. Fokina and B. S. Pitel'man of Kiev Technological Institute of Light Industry", page 66, submitted Mar. 15, 1947.

Two consecutive reports (pages 21 and 20) by F. I. Trishin, submitted March 28, 1947, suggest a new method for simultaneous quantitative and qualitative analysis. The latter is simply a "Description of the Diagram of the Registering Automatic Apparatus for Quantitative and Qualitative Analysis of Ions According to Potential and Time of their Liberation with a Steady Amperage", alluded to in the first, "Electrochronometric Met od of Analysis. 1st Report".

In the new method suggested in this work, the consumed time is a measure of the quantity of the substance under investigation. The increase in the potential is an indicator of the beginning and end of the ion liberation and also determines its chemical nature. The [redacted] apparatus automatically effected the stabilization of the amperage and also permitted the automatic recording of the voltage of the electrolyzer, which is, [redacted] under [redacted] given conditions, a function of the potential of the ion liberation. The [redacted] electolyzer, in which the ion liberation is carried out on a mercury cathode in the form of an amalgam, was constructed for this purpose. The following conditions for the analysis were established: 1) electromagnetic vibration of the cathode and the electrolyte to increase diffusion and decrease polarization, 2) use of a high concentration of the electrolyte to eliminate the liberation of more than one type of ion at one time, 3) assurance of a constant electroconductivity of the electrolyte and elimination of the concentration polarization of the anolyte by use of a [redacted] buffer salt (potassium chloride). Calculations established the amperage at which a unit quantity of substance will be liberated in a unit of time. The results, satisfactorily duplicable,

are recorded on a tape as curves giving the relation of the potential of liberation to the time of electrolysis and the time consumed in the ion liberation. All but one of the five references in the bibliography are to other works by the same author.

The two remaining articles of this periodidal are "The Theory of Specific Precipitations" by L. M. Kul'berg of Kiev Technological Institute of Light Industry, page 45, submitted Feb. 15, 1947, and "The Theory of Organic Reagents. III. Research on the Biuret Reaction" by I. M. Korenman of the Laboratory of Microanalysis of the Institute of Chemistry and the Chair of Analytical Chemistry of Gorki State University, page 52, submitted Nov. 1, 1946.

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