CHRONICLES

CONFERENCE ON COORDINATION CHEMISTRY

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The 15th International Conference on Coordination Chemistry, organized by the Academy of Sciences of the USSR and by Moscow State University, was held in Moscow on June 25-30, 1973. More than 1300 scientists from various countries took part in it. Ten plenary lectures and 386 sectional communications were delivered. The conference was opened in the Kremlin Palace of Conferences by a special session devoted to the centenary of the birth of L. A. Chugaev. The sectional conferences were grouped according to the problems of coordination chemistry: spectroscopy, structure and the chemical bond, the synthesis of new types of coordination compounds, catalysis, kinetics and reaction mechanisms, thermodynamics, and complex formation in nonaqueous and gaseous media. In actual fact, in these sectional sessions, as in the plenary lectures, a considerably wider range of questions was considered – beginning from the role of complex formation in the activity of enzymes and ending with the study of the products of the thermolysis, photolysis, and radiolysis of coordination structures (lecture of Academician V. I. Spitsyn). Some of the lectures were essentially devoted to the latest problems of organic chemistry, such as: the structure and reactions of π complexes, the reactions of olefins with the participation of Ziegler catalysts, and the determination of the conformations of organic substances from their PMR spectra with the aid of shift agents of the type of europium dipivaloylmethanate. Furthermore, approximately half the lectures dealt with subjects and problems lying at the boundary between organic and inorganic chemistry. They naturally required the wide use of methods of both branches of chemical science. Consequently, it is not surprising that in a number of the investigations reported wide use was made of the methods of modern organic chemistry (NMR spectra in diverse variants, including the Overhauser effect, mass spectra, ESR spectra, and optical rotatory dispersion and circular dichroism). The specific nature of coordination chemistry, enabling ions of various metals to be included in the composition of organic molecules, has opened up the possibility of using the Mössbauer effect, ESR spectroscopy, and other methods. A whole series of communications was devoted to determining the structures of complexes by means of the Faraday effect, and also by x-ray structural analysis.

The lectures devoted to complex heterocyclic compounds (we do not include in this concept metallocycles of coordination structure and chain structures), related predominantly to classical coordination derivatives of pyridine. A number of Soviet, Slovak, American, and Hungarian scientists have investigated the optical and magnetic properties of complexes (including those with mixed ligands) including a molecule of pyridine or a substituted derivative of it. Some communications related to complexes of the bipyridyls. A communication of the Brazilian scientist M. I. D. Holand must be mentioned; he has shown that 2-(aminomethyl)pyridine is capable in the presence of Fe^{2+} salts of converting oxo acids into the corresponding amino acids, and, consequently, it can be used as a convenient model for studying transamination. The problem of the role of complex formation in the mechanism of the action of biologically active substances was widely considered in the plenary lecture by the Polish professor B. Jézowska-Trzebiatowska. Her own investigations, reported at the conference, related to complexes based on macromolecular ligands (in particular, 14-membered rings with four nitrogen atoms, which model the inner ring of the porphyrins). Authors from various countries gave a number of papers devoted to porphyrin structures, including the kinetics of complex-formation.

Rostov chemists (O. A. Osipov, A. D. Garnovskii, and V. I. Minkin and their co-workers) presented a series of communications on complexes based on azoles and their Schiff's bases or acyl derivatives (dielcometric and electrochemical investigations, correlation analysis, and quantum-chemical calculations).

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Of the investigations devoted to complexes based on nitrogenous heteroaromatic compounds, those relating to complexes of imidazole, histidine, and histamine must be mentioned. They are connected with the elucidation of the role of complex formation in the biological action of such substances. The American J. Vill gave a lecture on complex compounds of some purines and pyrimidines. Of interest were the review lectures of V. A. Kabanov on the modeling of enzyme systems by means of copper complexes of polyvinylpyridine, of V. M. Dziomko on the synthesis of extractants belonging to the pyrazole, imidazolylimidazole, and indoloquinoxaline series, and of N. D. Rus'yanova on the separation of pyridine and quinoline bases of coal via their halostibates. A series of papers of a traditional analytical direction related to the use of various heterocyclic compounds as analytical reagents (8-hydroxy- and 8-mercaptoquinolines and some dithiocarbamates). Connected with these were some communications, for example, on complexes of o-hydroxythiopyrone or triazinetrithione having as their aim the search for antidotes.

Lectures by A. N. Nesmeyanov and his colleagues were devoted to the fine synthesis of organic compounds of gold and of complexes of iron carbonyls with pyrazoles. The properties of the latter resemble those of the analogous complexes of cyclopentadiene, but they are very unstable. Consequently, they have been studied mainly by PMR methods. Nitrosyl complexes of iron with suitable ligands, including azoles, figured in a number of papers.

On the whole, the conference presented much that was new and interesting not only for inorganic, physical, analytical, and organic chemistry, but also for the chemistry of heterocyclic compounds.