

CHRONICLES

SYMPOSIUM ON THE CHEMISTRY AND TECHNOLOGY OF THE HETEROCYCLIC COMPOUNDS OF FOSSIL FUELS

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The Second Symposium on the Chemistry and Technology of Heterocyclic Compounds of Fossil Fuels was held in Donetsk on October 3-6, 1973. More than 200 scientists from the various scientific centers of the Soviet Union and workers in the coal-tar-chemical industry participated in the activities of the symposium. More than 50 papers were presented in the sessions of the following sections: "Chemistry and Technology of Nitrogen-Containing Compounds," "Chemistry and Technology of Sulfur-Containing Compounds," and "Search for Methods for the Utilization of Products from the Refining of Heterocyclic Compounds." In addition, two plenary sessions were held.

The products of the refining of fossil fuels are currently the principal source of nitrogen- and sulfur-containing heterocyclic compounds. The advances in the coal-tar-chemical and petrochemical industries are having a substantial effect on the introduction of chemical processes into the national economy, having provided the chemical industry with raw materials and the other branches of industry with chemical products.

At the symposium it was noted that some nitrogen-containing heterocyclic compounds obtained from coal (for example, β -picoline) have an unlimited market and are scarce, while others (quinoline, isoquinoline, carbazole, etc.), the resources of which amount to thousands or even tens of thousands of tons, are not being skillfully utilized and are burdensome industrial waste products. Considering that the source of raw materials for heterocyclic compounds is constantly increasing due to the growth of the coal-tar-chemical and petrochemical industries and will probably also increase significantly in the immediate future due to semicoking tar, the search for methods for their utilization should be considered to be particularly urgent.

Methods for the utilization of considerable amounts of pyridine and α -picoline have been found thanks to research carried out in the Institute of Organic Chemistry of the Ukrainian SSR and the Chlorine Institute (Kiev) on the synthesis of and development of technology for the preparation of khloramp (an effective herbicide to combat rose smartweed) and katapin (a surface-active agent). New methods for the utilization of coal-tar thiophene have been sought by means of studies by the Institute of Heteroorganic Compounds of the Academy of Sciences of the USSR (Moscow), the Makeevskii Coal-Tar-Chemical Plant, and a number of other enterprises. An effective method for the acidic extraction of indole from coal tar has been proposed by the Phenol Plant and Donetsk State University; this is extremely essential for the satisfaction of the requirements of industry, which uses indole for the synthesis of tryptophan.

The ozonolysis of quinoline has been investigated by the co-workers of the Eastern Institute of Carbon Chemistry, and technology for the production of nicotinic acid from quinoline has been developed. A method for the isolation of carbazole from crude anthracene by complexing has been proposed.

Important and interesting research on the catalytic synthesis of pyridine derivatives was reported by the co-workers of the Institute of Organic Synthesis of the Academy of Sciences of the Latvian SSR. A report by co-workers of the Donetsk Branch of the Institute of Physical Chemistry of the Academy of Sciences of the Ukrainian SSR and Donetsk State University on the hetarylation of organic compounds by means of N-acyl salts of six-membered heteroaromatic cations, which has made it possible, in one step, to ob-

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tain diverse derivatives of phenols, aromatic amines, carbonyl compounds, indole, pyrrolothiophene, etc., caused an extensive exchange of ideas.

The possibility of the preparation of effective inhibitors of metal corrosion, antioxidants, dyes, stabilizers for polymers or binders, adhesives, vulcanization accelerators and antioxidants for raw and cured rubbers was reported. Special attention in connection with the problem of the protection of the biosphere was directed to the problem of the utilization of pickling baths inhibited by salts of pyridine bases and to methods for the possible microbiological transformation of such substances.

Considerable interest was generated by a report by Irkutsk chemists regarding the possibility of the preparation of efficient extracting agents for precious metals during the refinement of sulfurous components of Bashkirian oils.

The symposium notes that, despite the fact that a number of universities and several academic establishments (the Institute of Organic Synthesis of the Academy of Sciences of the Latvian SSR, the Institute of Organic Chemistry of the Academy of Sciences of the Ukrainian SSR, and the Donetsk Branch of the Institute of Physical Chemistry of the Academy of Sciences of the Ukrainian SSR) have participated with the branch institutes in the development of coal-tar chemistry in recent years, the number of scientists doing research on this problem is, in general, clearly inadequate and is not in line with the significance that it has in the national economy of our country. The scientific forecasting of requirements with respect to the chemical products of coking is undergoing only weak development; this does not enable industry to develop processes for the isolation of heterocyclic compounds from the products of coal-tar refining.

The conference demonstrated the considerable efficiency of research workers active in this field. We also note that the theoretical level has also risen substantially in recent years and that diverse methods for the isolation and analysis of substances have come to be used considerably more extensively.