

## JUBILEES AND DATES

### 80TH BIRTHDAY OF NIKOLAI ALEKSEEVICH PREOBRAZHENSKII (1896-1976)

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October 20, 1976, marked the 80th birthday of Professor Nikolai Alekseevich Preobrazhenskii, prominent scientist in the area of biologically active natural compounds. The focal point in his investigations was research on the chemistry of heterocyclic compounds, in which he developed the stereochemical aspects of the synthesis of compounds with several asymmetric carbon atoms and laid the foundation for the creation of technological methods for the preparation of a number of the most important alkaloids and vitamins.

Professor Preobrazhenskii was born in 1896 in Kostroma. In 1924, after graduating from Moscow University, he began his graduate studies and his first research on the synthesis of alkaloids under the supervision of Academician A. E. Chichibabin. At the end of his graduate studies, Professor Preobrazhenskii worked in the Moscow Higher Technical School, in the S. Ordzhonikidze All-Union Scientific-Research Pharmaceutical-Chemistry Institute, in the All-Union Scientific-Research Motion-Picture Institute, and in the Institute of Organic Chemistry of the Academy of Sciences of the USSR, where he headed the laboratory of alkaloids. Beginning in 1938, he became head of the Department of Chemistry and Technology of Fine Organic Compounds of the M. V. Lomonosov Moscow Institute of Fine Chemical Technology. In addition, he was one of the creators of the All-Union Scientific-Research Vitamin Institute, where in 1947 he was the head of the synthetic branch.

For his fruitful educational and scientific activity, Professor Preobrazhenskii was awarded orders and medals. He was awarded the title of Honored Scientist and Technician of the RSFSR and Distinguished Doctor of the Budapest Technical University. He was a laureate of the State Prize of the First Degree and a Hero of Socialist Labor.

Professor Preobrazhenskii's scientific career is characterized by his distinct individuality, the breadth of the range of his research in the most promising directions, and the depth of his scientific foresight and practical inclinations.

One of the first studies of Professor Preobrazhenskii was devoted to the preparation of pilopic acids [1]. The method that he developed made it possible to realize the synthesis of diazomethyl pilopyl ketones. The logical culmination of these studies was the classical total synthesis of isopilocarpine and pilocarpine [2], which has been isolated from the leaves of the Brazilian plant *Pilocarpus Jaborandi* and is still successfully used in medical practice for the treatment of glaucoma. In the course of these studies he obtained the optical antipodes of labile ethylparaconic acid as well as other alkaloids of the pilocarpine and pilosinine group.

The alkaloid emetine [3] and the corresponding alkaloids of the plant *Ipecacuanha* [4] were synthesized for the first time under the supervision of Professor Preobrazhenskii. His new and original approach to the synthesis of the individual structural elements of these compounds was extended to the preparation of some quinine alkaloids. He also accomplished the synthesis of cis- and trans-homocincholoipones and cinchonamine [5]. Among the studies in the field of indole alkaloids one should note the synthesis of eserine [6] and yohimbine derivatives. His research in the field of bis(benzyltetrahydroisoquinoline) alkaloids culminated in the syntheses of the alkaloids tubocurarine [7] and magnolin [8].

Professor Preobrazhenskii's research in the field of tropane alkaloids received great acclaim. In addition to his research in stereochemistry he developed industrial methods for the synthesis of tropine and cocaine [9] and also found a successful method for the separation of the racemic alkaloid scopolamine into its optical antipodes. Of scientific and practical value are his studies on the synthesis of the alkaloid arecoline [10], which constituted the foundation for the organization of its manufacture (arecoline is used in veterinary medicine for the treatment of helminthiases in farm animals). With his studies on the synthesis of alkaloids Professor Preobrazhenskii won widespread fame not only in the Soviet Union but also abroad.

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In addition to his creative development of problems in the field of alkaloids, Professor Preobrazhenskii made a great contribution to the development of the Soviet vitamin industry. His studies on the synthesis of vitamins B<sub>1</sub>, B<sub>2</sub>, B<sub>6</sub>, E, B, P, and PP and lipoic acid, many of which have gone into industrial production [11], are widely known. His research on the synthesis of vitamins served as a foundation for the development of studies on the preparation of coenzymes and enzymes [12].

The scope of the scientific interests of Professor Preobrazhenskii gradually widened, and not only compounds of plant origin but also substances contained in the living organism became the objects of his studies. In his later years his interest was particularly drawn to porphyrins, the structural components of chromoproteins that participate in the respiration process of the organism. His studies in this area began with the synthesis of pyrroles and the study of the structure of salts of diacetyl- and formylpyrroles [13]. Various dipyrromethenes [14], dipyrromethanes [15], and finally porphyrins [16], were obtained from pyrrole.

This is a far-from-complete listing of Professor Preobrazhenskii's research (more than 540 papers, 65 of which are protected by authors' certificates and many of which have been incorporated in industry, are associated with his name). The names of more than 200 students are encountered in his published works.

Professor Preobrazhenskii was a talented educator of youth: hundreds of students and dozens of graduate students, many of whom have received master's and doctoral degrees and are currently continuing to develop his concepts and scientific trends, have passed through the auditoriums and laboratories of the Moscow Institute of Fine Chemical Technology.

#### LIST OF THE MOST IMPORTANT SCIENTIFIC RESEARCH OF N. A. PREOBRAZHENSKII

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