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|  | CENTRAL INTELLIGENCE AGEN<br>INFORMATION FROM<br>FOREIGN DOCUMENTS OR RADIO BRO   |                                |
| COUNTRY  | USSR  | DATE OF                        |
| SUBJECT  | Scientific - Chemistry, antibiotics   | INFORMATION 1954               |
| HOW<br>PUBLISHED   | Bimonthly periodical  | DATE DIST. 14 Jul 1954         |
| WHERE<br>PUBLISHED   | Moscow  | NO. OF PAGES 2                 |
| DATE<br>PUBLISHED  | Feb 1954  |                                |
| LANGUAGE   | Russian   | SUPPLEMENT TO<br>REPORT NO.    |
| DF THE UNITED STAT<br>And 794, DF The U.<br>Lation of its cort | AINS INFORMATION AFFECTING THE NATIONAL CERENSE<br>88. WITHIN THEMEANING OF TATLE PA SECTIONS 793<br>3. COBE, AS AMFORD 177 THANGHISSION OR AFVEL<br>THE SENEDUCTION OF ANY AND TORIZE FRAND IS<br>THE SENEDUCTION OF THIS TORM IS INCOMPOSITED | HIS IS UNEVALUATED INFORMATION |
| SOURCE   | Izvestiya Akademii Nauk SSSR, Otdeleniye<br>pp 1913192  | Khimicheskikh Nauk, No 1,      |

## M. M. SHEMYAKIN'S WORK ON ANTIBICTICS

M. M. Shemyakin was elected Corresponding Member of the Academy of Sciences USSR, in the speciality of organic chemistry, at a meeting of the Department of Chemical Sciences of the Academy held on 19-20 October 1953.

Shemyakin has complete mastery of the theory and experimental techniques in the field of organic chemistry. Recently he has become the foremost Soviet specialist in the chemistry of antibiotics. Shemyakin's book <u>The Chemistry</u> of <u>Antibiotics</u> [Khimiyu Antibiotikov], which is well-known, has already been published in a second edition. Among his achievements are the syntheses of synthomycin and levomycetin, substances which he has introduced and which are the most effective drugs against various forms of typhus, trachoma, and dysentery.

Shemyakin has published a great number of original scientific investigations which deal with various problems of organic chemistry. Of great importance is the theory of the hydrolytic splitting of the C-C bond, which was discovered by him; it disclosed the causes, character, and mechanism of many commonly encountered types of chemical conversions. One must emphasize that on the basis of this theory Shemyakin succeeded in explaining many important transformations of the following antibiotics: actidione, humulone, the streptomycins, and others. In connection with this work, the explanation of the formation of maltoi from streptomycin is particularly interesting, because it clarifies the transition from streight-chain carbohydrates to branched the nature of the reactions of transamination and elpha-decarboxylation of amino acids, beta-decarboxylation of aminodicarboxylic acids, the fission of gamma-keto-alpha-aminoacils, and many other biochemical transformations.

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Among other theoretical investigetions done by Shemyakin one may note his research on the chemistry of aldehyde acids, which has elucidated completely the structure of these compounds and has enabled him to find general methods for the transformation of aldehyde acids into compounds of the quinoline and isoquinoline series. In connection with this work he first investigated the thermal decomposition of salts of aldehyde acids, and then of salts of carboxylic acids in general. Also important is Shemyakin's work in the field of other carbonyl compounds, particularly quinones, which has culminated at present in the development of a general method for the conversion of quinones and their derivatives into diketocarboxylic acids, hydroxydiketocarboxylic acids, and triketocarboxylic acids of the alicyclic and aromatic series.

Of great practical interest is Shemyakin's work in the field of sulfa drugs, on the preparation of soluble sulfonamides, etc. His investigations in the field of vitamin chemistry have yielded very valuable results. Shemyakin has studied in particular detail problems pertaining to tautomeric transformations in the vitamin B<sub>6</sub> group and clarified the significance of pyridoxal phosphate in amino acid metabolism.



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