By saturating **II** with hydrogen bromide in an atmosphere of nitrogen first in the cold and then at 100° C we obtained 1-bromo-2-(β-bromopropyl)cyclohexane (**III**), the structure of which was confirmed by its IR spectrum. Bp 99–100° C (2 mm), n_D^{20} 1.5280, d_D^{20} 1.5251. Found, %: C 38.19; H 5.70; Br 56.34; MR_D 57.09. Calculated for $C_9H_{16}Br_2$, %: C 38.03; H 5.63; Br 56.23; MR_D 57.03. Yield 86.3%.

The reaction of **III** with a threefold excess of anhydrous Na_2S in dimethylformamide at 125° C gave a 54.5% yield of **I** in the form of a mixture of cis- and trans-isomers. Bp 89°–90° C (20 mm), n_D^{20} 1.5090, d_4^{20} 0.9783. Found, %: C 57.24; H 10.35; MR_D 47.61. Calculated for $C_9H_{16}S$, %: C 57.22; H 10.25; MR_D 47.43. The structure of I was confirmed by its IR spectrum.

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NITRATION OF 3-METHYL-3H-IMIDAZO[4, 5-b]PYRIDINE

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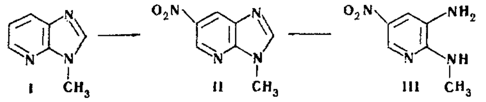
UDC 547.785.5+547.822.7+542.958.1

We have effected the direct introduction of a nitro group into the molecule of an imidazo[4,5-b]pyridine for the first time. In contrast to benzimidazole, the nitration of which takes place readily even in the cold [1], 3-methyl-3H-imidazo[4,5-b]pyridine (I) undergoes nitration with a mixture of nitric and sulfuric acids only at 140–160° C. The reaction product [yield 50%, mp 220–221° C (ethanol). Found, %: C 46.92; H 3.34; N 31.34. Calculated for $C_7H_6N_4O_2$, %: C 47.19; H 3.39; N 31.45] proved to be identical with the compound obtained from 3-amino-2-methylamino-5-nitropyridine (III) and formic acid, which shows its structure to be 3-methyl-6-nitroimidazo[4,5-b]-pyridine (II).



No other nitro derivatives apart from **II** were detected. Compound III was obtained by the reduction with ammonium sulfide of the product of the interaction of 2-chloro-3,5-dinitropyridine with methylamine [2]. Mp 199–200° C (water). Found, %: C 42.94; H 4.83. Calculated for $C_6H_8N_4O_2$, %: C 42.86; H 4.79.

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QUATERNIZATION OF 3-METHYL-3H-IMIDAZO[4, 5-b]PYRIDINE

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3-Methyl-3H-imidazo[4,5-b]pyridine (I), which has two basic centers [1], reacts with alkylating agents at the N^1 atom with the formation of monoquaternary salts. The structure of such compounds as N^1-alkyl(aryl, aralkyl)-N^3-methylimidazolium salts (II) has been shown by the oxidation of some of them ($R = CH_3, X = I$; $R = CH_2C_6H_5$, $X = Cl$) with potassium ferrocyanide in alkali at a temperature not exceeding 10° C to N^1,N^3-disubstituted imidazo[4,5-b]pyridin-2-ones (III) ($R = CH_3, CH_2C_6H_5$). The same substances have been obtained by the methylation with dimethyl sulfate and the benzylation with dimethylphenylbenzylammonium hydroxide of 3-methylimidazo[4,5-6]pyridin-2-ones (IV) in an alkaline medium. Compound IV was synthesized by fusing 3-amino-2-methylaminopyridine with urea at 170° C.