2-Methyl-3-hydroxy-4-pyridinecarboxylic acid (IV). The reaction of I with II was carried out as above. The precipitate was extracted with mixture B, and the extract after removal of III was evaporated to give 0.17 g (9%) of IV, mp (from water) 310° (decomp.). Literature values: mp 302-308° [5], 321° [6]. UV spectrum: λ_{max}, nm (ε): in 0.1 N hydrochloric acid: 312 (7200); in 0.1 N sodium hydroxide: 307 (5900), 240 (5800), m/e 153. PMR spectrum: δ, ppm, in D_2O + NaOD: 6-H 7.35; 5-H 6.88; 2-CH_3 2.40. R_f 0.45 (system B); 0.34 (system A).

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ISOMERIC COMPOSITION OF THE BROMINATION PRODUCTS OF o-XYLENE

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The synthesis of riboflavin (vitamin B_2) requires the use of monobromo-o-xylene, which is obtained by the bromination of o-xylene (I) with bromine. A chromatographic method for the quantitative determination of the bromination products of I has been described, and it has been shown that bromination in the presence of iron activated with iodine leads to the formation of 4-bromo-o-xylene (II) together with only small amounts of 3,4- and 4,5- dibromo-o-xylene (III) and (IV) [1].

The monobromo-o-xylene obtained, however (a narrow fraction boiling over a 2° range) is not the pure isomer II. It is known that the boiling point of the material can be raised slightly, from 211-212° to 214-215°, if it is carefully sulfonated, the barium salt of the resulting sulfonic acid is recrystallized, and the 4-bromo-o-xylene is regenerated by hydrolysis in aqueous solution [2]. Since the boiling points of V and II are 211-212° and 214-215° respectively [3], it may be assumed that the monobromo-o-xylene is a mixture of isomers, rather than pure II.

EXPERIMENTAL

A check on the known methods of synthesis [1, 2] has shown that distilled monobromo-o-xylene, crystallized at −30°, melts at temperatures below −10°, although the melting point of II is −2 to 0° [3]. This shows the presence of appreciable amounts of the by-product isomer V, confirmed by chromatographic analysis. The chromatographic conditions were as follows: Simadzu model GC-1 chromatograph, Silochrome-2 adsorbent of particle size 0.25-0.5 mm, diameter of adsorption column 3 mm, length 2.7 m, thermal conductivity detector, carrier

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TABLE 1. Isomeric Composition of Monobromo-o-xylene Obtained by Literature Methods

Temperature, deg	Duration, h		Isomer content, %		Reference
	addition of bromine	keeping	3-bromo-o-xylene	4-bromo-o-xylene	
40	0,5	0,5	25±2	75±2	[1]
—5	3,0	20	21±2	79±2	[2]

gas helium, rate of gas flow 50 ml/min, evaporator temperature 200°, column temperature 130°, detector temperature 150°, duration of analysis approximately 35 min. Under these conditions the retention time for I was 6.5 min, V 15 min, II 16.5 min, and for the isomers of dibromo-o-xylene 28.5, 30.5, and 31 min.

The isomeric compositions of the monobrominated o-xylene containing bromine in the nucleus, obtained by the method described previously [1, 2], are shown in Table 1.

Apart from the isomers containing bromine in the nucleus, ω-bromo-o-xylene (VI) is also formed in small amounts. This may be determined by alcoholysis in hot alcoholic alkali.

Thus, the presence of a single peak for monobromo-o-xylene in the chromatogram obtained by Shereshevskii and Berezovskii [1] must have been due to insufficiently sharp resolution. Actually, the monobromo-o-xylene contains all the isomers, the quantities being, under the conditions described in refs. 1 and 2: II, 75-79% (±2%), V 21-25%, and VI, 1-3%.

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STUDY OF THE INFLUENCE OF CERTAIN FACTORS OF THE EXTERNAL MEDIUM ON THE STABILITY OF DYCLOXACILLIN USED FOR INJECTIONS

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Dycloxacillin, which is the sodium salt of 3-(2,6-dichlorophenyl)-5-methyl-4-isoxazolyl-penicillanic acid, exerts a bacterial action on Gram-positive bacteria, including penicillinase-forming staphylococci [1-3].

Dycloxacillin used for injections is in the form of a white porous mass, which is readily soluble in water.

In the present work we studied certain properties (hygroscopicity, thermal stability, susceptibility to atmospheric oxygen and light) of dycloxacillin used for injections and its aqueous solutions, to select the optimal conditions for its preparation and storage. The stability of the aqueous solutions of dycloxacillin, containing 100-105 mg/ml of the active

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