ORIENTATION IN THE THIAZOLE NUCLEUS

IN the course of our studies on the orientation in the thiazole nucleus, we have brominated and nitrated a number of thiazole derivatives. In view of the recent publication by Prijs, Mengisen, Fallab and Erlenmeyer,[1] we record below our findings.

2-Methylthiazole, on bromination (at 100° C.) furnishes 2-methyl-5-bromothiazole, and on nitration (at 100° C. for 10 hours and at 120° C. for 4 hours), yields 2-methyl-5-nitrothiazole (m.p. 120-21° C.). 4-Methylthiazole could not be brominated; on nitration it gives a nitro compound, m.p. 58-59° C. shown to be 4-methyl-5-nitrothiazole.[2] 5-Methylthiazole on bromination yields a bromo compound which, heated with sulphanilamide, potassium carbonate and copper powder, furnishes 2-sulphanilamido-5-methylthiazole; hence the bromo compound should be 2-bromo-5-methylthiazole. On nitration, 5-methyl-thiazole furnishes a nitro compound, m.p. 110° C., which, not being identical with 2-nitro-5-methylthiazole, m.p. 61° C.,[2] should be 5-methyl-4-nitrothiazole.

2-Hydroxythiazole (m.p. 69-70° C.) prepared by the action of chloracetaldehyde on ammonium thiocarbamate, on bromination furnished 2-hydroxy-5-bromothiazole (m.p. 67° C. decomp.), on nitration 2-hydroxy-5-nitrothiazole (m.p. 146-47° C.), and on treatment with acetic anhydride, 2-hydroxy-5-acetylthiazole (m.p. 195-97° C.).

5-Acetaminothiazole on bromination, even with one molecular equivalent of bromine, yielded only the dibromo derivative, 2 : 4-dibromo-5-acetaminothiazole, m.p. 148-49° C., as reported by Prijs, *et al.*;[1] the mono-bromo derivative could not be obtained. When 5-acetaminothiazole-2-carboxylic acid (I) was brominated, instead of the 4-bromo derivative of this acid, only 2 : 4-dibromo-5-acetaminothiazole could be isolated.

Nitration of 5-acetaminothiazole furnished a product, m.p. 197-98° C., which Prijs, *et al.*[1] consider to be 2 : 4-dinitro-5-acetaminothiazole, but we find this compound to be only the mononitro compound, 4-nitro-5-acetaminothiazole, not only from the analytical figures but also because 5-acetaminothiazole-2-carboxylic acid on nitration furnished 5-acetamino-4-nitrothiazole-2-carboxylic acid, m.p. 155-56° C., which on decarboxylation yielded 5-acetamino-4-nitrothiazole, m.p. 197-98° C. identical with the product obtained above. Fuller details will be published elsewhere shortly.

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1. Prijs, Mengisen, Fallab and Erlenmeyer, *Helv. Chim. Acta.*, 1952, **35**, 187. 2. —, Ostertag and Erlenmeyer *Ibid.*, 1947, **30**, 1200.