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Reactivities of Heteroaromatic Cations containing a Group VIB Element in Nucleophilic Reactions. Reactions of 9-Phenyl-xanthylium, -thio-xanthylium, and -selenoxanthylium Salts with Amines, Sodium Phenolate, and Sodium Benzenethiolate.

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Reactions of 9-phenylchalcogenoxanthylium salts (**1a-c**) with some nucleophiles have been examined in order to find the differences in reactivity in nucleophilic reactions. The differences were found in the reactions with aniline or sodium phenolate. The results show that the thioxanthylium salt (**1b**) gave the products formed on attack by the heteroatom of the ambident nucleophiles and the ratio of the carbon attack increased in the order the xanthylium salt (**1a**) > the selenoxanthylium salt (**1c**) > (**1b**).

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A Simple and Efficient Synthesis of the γ -Lactam Analogue of β -Lactam Antibiotics. Ring-expansion of Penicillins to Homopenicillins.

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Irradiation of the β -ketosulphoxonium ylide, prepared easily from the benzylpenicillin methyl ester, with UV light resulted in the smooth formation of the corresponding homopenicillin methyl ester which is hydrolysed to give benzylhomopenicillin quantitatively. The present reaction is in principle applicable to the preparation of the γ -lactam analogues of other β -lactam antibiotics. The special feature of this method is that all reactions proceed under mild conditions and the stereochemistry of the starting penicillins is retained in the resulting homopenicillins.

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Intramolecular Cyclization of Purine Nucleosides by *N*-Halogeno-succinimides/Acetic Acid. A Mechanistic Aspect on the *C*(8)-Halogenation of Purine Nucleosides.

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C(8)-Halogenation of purine nucleosides with a variety of halogenating agents has been generally considered to occur by the direct attack of a halogenium ion or a halogen radical at the *C*(8)-position in the purine ring. 2',3'-*O*-Isopropylidene protected purine nucleosides underwent an intramolecular oxidative cyclization leading to the corresponding 5'-*O*,8-cyclopurine nucleosides upon treatment with *N*-halogenosuccinimides in acetic acid. The present result strongly suggests that the initial attack of a halogenium ion occurs at the *N*(7)-position rather than the *C*(8)-position under the conditions employed.