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THE CYCLOADDITION OF 3-PHENYLSYDNONE WITH PHENYL ISOCYANATE[1)]

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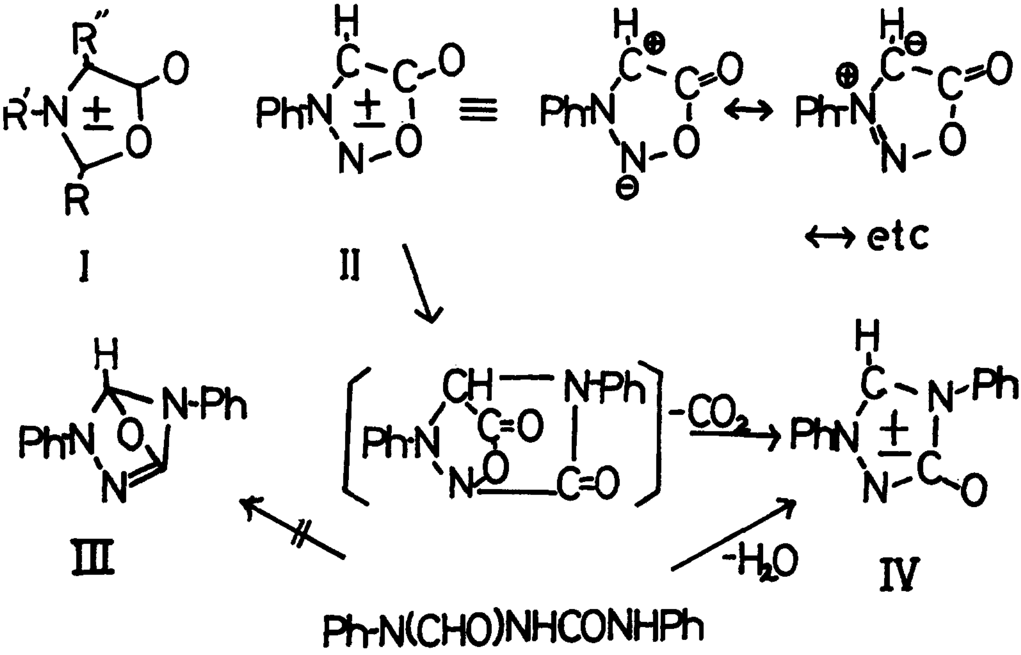
Huisgen and his co-workers[2,3)] have recently reported on the 1,3-dipolar cycloaddition reactions of meso-ionic oxazolones (I) with acetylenes and hetero-multiple bonds. Of special interest is the formation of new meso-ionic ring systems by the reaction of I with hetero-cumulenes.[2)] We would like to report here another example of such meso-ionic ring formation by the reaction of 3-phenylsydnone (II) and phenyl isocyanate. The 1,3-dipolar addition reactions of sydnones with carbon-carbon unsaturated bonds[4)] and with benzaldehyde[5)] have already been described.

When 3-phenylsydnone (1 g) was heated in 2 ml. of phenyl isocyanate at 140°C for three hours, an evolution of carbon dioxide was observed, and a compound with a composition of $C_{14}H_{11}N_3O$ was isolated (1 g). This compound showed a strong carbonyl absorption at 1680 cm^{-1} in its IR spectrum, and was found to be identical with the compound obtained by heating N-formyl-1,4-diphenylsemicarbazide, to which an endo-oxatriazole structure (III) has been erroneously given by Schneider.[6)] Considering these two modes of formation of this product, the only possible structure of the reaction product will be the meso-ionic 1,2,4-triazolone (IV).

Sydnones are less reactive 1,3-dipoles than the meso-ionic oxazolones I, and 3-phenylsydnone did not react either with phenyl isothiocyanate or with carbon disulfide.



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