

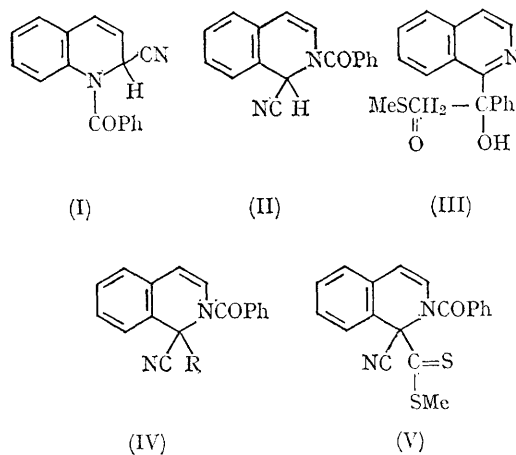
## Reissert Compound Studies: Generation and Reaction of the Reissert Anion at Room Temperature<sup>1</sup>

By FRANK D. POPP and JOHN M. WEFER

(Department of Chemistry, Clarkson College of Technology, Potsdam, New York)

A WIDE variety of base-catalyzed reactions has been reported<sup>2</sup> for 1-benzoyl-1,2-dihydroquinaldonitrile (I) and 2-benzoyl-1,2-dihydroisoquinaldonitrile (II) (Reissert compounds). All of these reactions, however, require the generation of the Reissert anion at very low temperatures (for example, the use of phenyl-lithium at  $-20^{\circ}$ ) or at high temperatures (for example, the use of sodium hydride in refluxing xylene). We now wish to report the generation and reaction of this anion at room temperature.

Compound (I) (0.01 mole) was dissolved in dimethylformamide (40 ml.) and 30% sodium hydride in oil (0.01 mole) was added to the stirred solution. A red colour was formed (the anion) which faded in several minutes. After stirring for  $1\frac{1}{2}$  hr. the solution was poured on to ice (500 g.) and a 92% yield of 2-benzoylquinoline was obtained. In a similar manner (II) gave a 56% yield of 1-benzoylisoquinoline. Replacement of the dimethylformamide by dimethyl sulphoxide also gave the Reissert anion but the anion of the



solvent interacted with the product. Thus (II) gave an 83% yield of (III), m.p.  $250-251^{\circ}$ .<sup>3</sup>

If an alkyl halide (0.01–0.02 mole) is added to

(II) (0.01 mole) in dimethylformamide before the addition of sodium hydride (0.01 mole), the product is one of alkylation rather than rearrangement. Thus (IV) (R = Me; Pr<sup>n</sup>, m.p. 119—121°;<sup>3</sup> Pr<sup>l</sup>, m.p. 128—130°;<sup>3</sup> and CH<sub>2</sub>CO<sub>2</sub>Et, m.p. 129—131°)<sup>3</sup> was obtained in 91—99% yield.

When the alkyl halide was replaced by carbon disulphide (0.04 mole) (II) was recovered unchanged (not rearranged) indicating that the anion of (II) had apparently reacted with the carbon disulphide but that the adduct had decomposed on attempted

isolation. If, however, 0.01—0.02 mole of methyl iodide was added 2—5 min. after the start of the reaction (V), m.p. 174—176°,<sup>3</sup> was obtained in quantitative yield.

These reactions thus demonstrate that the Reissert anion can be generated under much simpler conditions than previously reported and greatly add to the synthetic utility of Reissert compounds. Further work is in progress on compounds of the type (III) and (V).

(Received, February 24th, 1966; Com. 119.)

<sup>1</sup> See H. W. Gibson, F. D. Popp, and A. Catala Noble, *J. Heterocyclic Chem.*, in the press for the previous paper in this series.

<sup>2</sup> W. E. McEwen and R. L. Cobb, *Chem. Rev.*, 1955, **55**, 511 and more recent papers by McEwen and co-workers.

<sup>3</sup> Satisfactory analytical and spectral data have been obtained for all new compounds reported.