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THE REACTION OF BENZIL AND 2-AMINOPYRIDINE.
A CORRECTION

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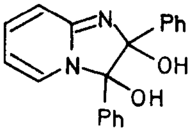
ABSTRACT : On the basis of X-ray crystallographic analysis, it is shown that the reaction of benzil and 2-aminopyridine affords, in agreement with Sokov's previous work, 2,2-diphenylimidazo-[1,2-a]-pyridin-3-one and not N-(2-pyridyl)-benzilmonoimine as we have previously proposed.

The reaction between 2-aminopyridine and benzil was first studied by Sokov.[1] He claimed that the first reaction product was the diol 1, which through a pinacol rearrangement afforded 2,2-diphenylimidazo-[1,2-a]-pyridin-3-one, 2. According to Sokov, 2 is a very unstable product taking up water very easily to yield N-(2-pyridyl)aminodiphenylacetic acid, 3. Lately, in the course of a systematic study on the formation of α-aminoketones derived from benzil, we came to the conclusion that the condensation of this diketone with 2-aminopyridine yielded the monoimine 4.[2] The purpose of this communication is the correction of our formerly assigned structure and the acknowledgement that Sokov's proposal was correct although 2 can be handled as a fairly stable compound.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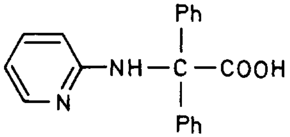
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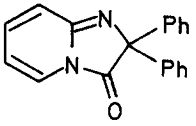
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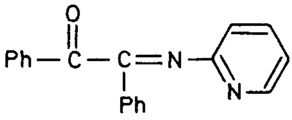
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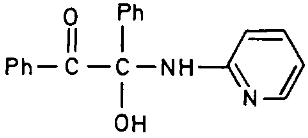
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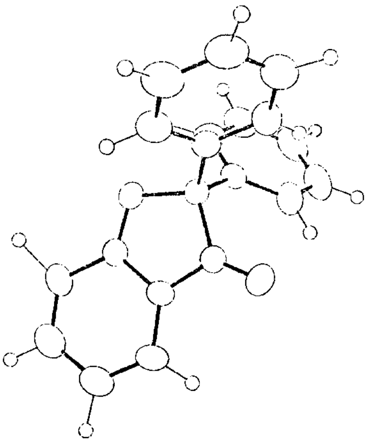
Our error was detected in the following way. When the supposed monoimine 4 was refluxed with water in THF the aminoacid 3 was obtained instead of the adduct 5 which was expected from our previous conclusions deduced from the uncatalyzed reactions of alcohols and amines with the supposed monoimine, 4. The structure of 3 has been firmly established by decarboxylation to N-(2-pyridyl)-diphenylmethylamine (reaction already reported by Sokov) and by its ^{13}C n.m.r. spectrum. Thus, the C=O signal at 173.03 ppm appeared at too high field for a phenone.[3] Reaction of 3 with diazomethane yielded the related methyl ester which was shown identical to that obtained by direct reaction of 2 with boiling methanol.



Figure

Then, ^{13}C n.m.r. spectra of the compounds obtained by reaction of various alcohols, amines and hydrazines with the reaction product of benzil and 2-aminopyridine were recorded. These compounds have all structures related to 3 since the C=O signal appeared between 172.75 and 171.36 as corresponding to esters, amides and hydrazides rather than to phenone derivatives. I.r. data of these compounds show also their actual nature as acid derivatives.

Finally, a single crystal X-ray analysis of 2 showed unambiguously its structure. A two dimensional view is shown in the figure.

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3. See for example, B. Alcaide, G. Escobar, R. Pérez-Ossorio, J. Plumet and D. Sanz, J. Chem. Research, (M), 1466 (1984).

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