

f acid is also minimised. After oxidation a further distillation is not necessary owing to the present method. This is a distinct advantage over Grotlisch's method.<sup>1</sup> The results of the table show that propionic and butyric acids get estimated as accurate but this is so with other methods also. Although Grotlisch claims that butyric acid does not appear in the final distillate in his method the claim appears doubtful. As a matter of fact the proportions of these acids in the liquor are small enough not to affect the gravimetric acid estimation to any appreciable extent.

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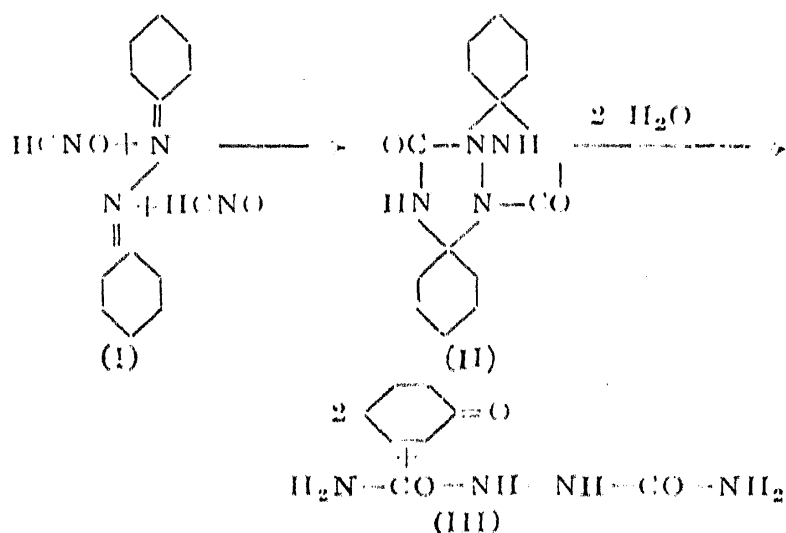
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### CRISSCROSS ADDITION TO HYDRO-AROMATIC KETAZINES

Conjugated systems of double bonds and imino groups generally take place at 1, 4 or 1, 2 positions.<sup>1,2,3</sup> However, conjugation between a carbon and nitrogen, like  $-C=N-$  or  $-C=N-$  as in azines, shows some peculiarities in addition reactions and Bailey, *et al.*, have observed a number of cases of 1,3 and 2,4 addition by the azine system.<sup>4,5</sup> This type of reaction was named "Crisscross Addition" by Bailey and McPherson.<sup>5</sup> A number of such additions with the azine system were subsequently observed.<sup>6,7</sup>

These observed cases of crisscross addition are, however, confined to aldazines and now the reaction has been extended to ketazines for the first time. Azines of hydroaromatic ketones add two molecules of cyanic acid in acetic acid below 10°C. with surprising ease, giving sharp melting, crystalline solids. The addition products

have been proved to be bitriazole compounds (II) by hydrolytic degradation to hydrazodicarbonamide (III); the course of reaction being as follows:



Crisscross addition of cyanic acid to cyclohexanone azine and 2-methyl and 4-methyl cyclohexanone azines gives the corresponding bitriazoles melting at 210°, 219° and 228.5° C. respectively.

The hydroaromatic ketazines also react with thiocyanic acid, maleic anhydride and  $\alpha$ -naphthoquinone with the same ease, giving crystalline adducts. Work is in progress towards settling the structure of the addition products.

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### EMBRYO CULTURE TO OBTAIN F<sub>1</sub> PLANTS OF INCOMPATIBLE CROSSES IN CORN (MAIZE)

In wide crosses, as a rule, in nearly all the ovules, after a definite period from the time of pollination, the endosperm begins to collapse. Shortly thereafter the embryo too collapses as its growth thereby gets arrested (Blakeslee and Satina, 1944). Occasionally in the hybrid one or more ovules may be found which are almost comparable with