Lineken.[6] Qualitative tests for conducting power were made in some instances with small volumes of hydrogen sulfide in test tubes using unstandardized dip type electrodes.

Conductance Data.—The results of conductance measurements on solutions of tetraethylammonium sulfamate in liquid hydrogen sulfide are shown in Table II and in Fig. 1.

TABLE II

CONDUCTANCE OF TETRAETHYLAMMONIUM SULFAMATE IN LIQUID HYDROGEN SULFIDE[a]

C	$k \times 10^6$	Λ
0.00016	0.4833	3.0
.000789	1.107	1.40
.001421	1.593	1.121
.003749	3.217	0.8581
.005949	4.558	0.7662

[a] C is concentration in moles per liter. k is the specific conductance of the solute. (The specific conductance of the solvent was 11×10^{-10} ohms^{-1} cm.$^{-1}$.) Λ is the molar conductance.

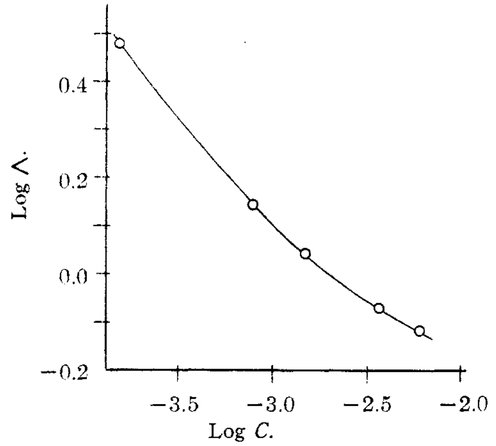

Fig. 1.

The specific conductance of the solute in a solution containing excess solid and presumably saturated, because the resistance of the solution was not changed by further agitation, was 4.79×10^{-6} ohm^{-1} cm.$^{-1}$.

The resistances were measured at about 1000 cycles per second. The resistance of the most dilute solution varied considerably less than 0.1% with changes in frequency (470 to 2640 cycles per second). It was not considered necessary to examine each solution for possible frequency effects because the specific conductance range involved was small.

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(6) Lineken, THIS JOURNAL, **68**, 1966 (1946).

SOMERVILLE, N. J.

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The Interaction of 6-Chloro-2-methoxy-9-phenoxyacridine and Ethylene Diamine

BY R. L. MCKEE[1] AND R. W. BOST

Recently it has been reported[2] that the reaction between 9-chloroacridine and an excess of ethylenediamine forms N,N'-bis-(9-acridyl)-ethylenediamine rather than the expected 9-(β-aminoethylamino)-acridine.

In confirmation of this report, we wish to record the similar formation of N,N'-bis-(6-chloro-2-methoxy-9-acridyl)-ethylenediamine.

Experimental

A mixture of 5.5 g. (0.016 mole) of 6-chloro-2-methoxy-9-phenoxyacridine,[3] 10 g. of phenol and 2.0 g. (0.033 mole) of ethylenediamine (Eastman Kodak Co., 95–100% dried over potassium hydroxide and distilled) was warmed on a steam-bath for two hours. Concentrated hydrochloric acid (10 cc.) was added, followed by 50 cc. of ether. The precipitate was filtered and washed with ether. The solid was ground thoroughly under concentrated ammonium hydroxide, filtered, washed with water and dried. The product was rather difficultly soluble in alcohol or dioxane and was recrystallized from absolute alcohol containing 20% of pyridine. The yield was 3.5 g. (81.5% of the theoretical) of fine yellow crystals melting with decomposition at 184–186°.

Anal. Calcd. for $C_{30}H_{24}Cl_2N_4O_2$: N, 10.34; Cl, 13.05. Found: N, 10.35, 10.39; Cl, 13.19.

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(1) Wm. S. Merrell Co., Postdoctoral Fellow.

(2) Albert and Gledhill, *J. Soc. Chem. Ind.*, **64**, 169 (1945).

(3) Drozdov, *J. Gen. Chem., U. S. S. R.*, **7**, 1668 (1937); through *C. A.*, **32**, 160 (1938).

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The Reaction between 4-Methoxybenzaldehyde and 2,3-Dimethylquinoxaline

BY R. L. MCKEE,[1] MARTHA K. MCKEE AND R. W. BOST

The reaction between 2,3-dimethylquinoxaline and a number of aromatic aldehydes has been studied by Bennett and Willis.[2] However, these authors carried out the condensations according to a standardized procedure to determine the effect of structure on reactivity, thereby frequently leaving the fate of the major portions of the reactants unascertained; 2,3-dimethylquinoxaline and *p*-methoxybenzaldehyde thus reacted to form 2-*p*-methoxystyrylquinoxaline (10%) and 2,3-di-*p*-methoxystyrylquinoxaline (10%).

A somewhat more exhaustive examination of this reaction is here reported. It is of interest that no 2'-*p*-methoxyphenyl-2,3-trimethylenequinoxaline could be found.

Experimental

2,3-Dimethylquinoxaline (15.8 g., 0.10 mole) and 27.2 g. (0.20 mole) of *p*-anisaldehyde were refluxed together in 43 cc. of acetic anhydride for thirteen hours, after which 35 cc. of solvent was removed by distillation. Water (20 cc.) was added to the residue, followed by a dropwise addition of acetone until the solution was homogeneous at its boiling point. Crystallization was allowed to proceed for thirty-six hours in the icebox, after which the solid was filtered and washed with a little ether. The brilliant yellow product weighed 8.5 g. (22%) and consisted of 2,3-di-*p*-methoxystyrylquinoxaline (m. p. 167–169°).

The filtrate from this product was steam distilled while still acidic, resulting in the recovery (by ether extraction of the distillate) of 11.0 g. of anisaldehyde. The residue in the still was made slightly alkaline (sodium hydroxide) and again steam distilled, thus yielding 1.0 g. of 2,3-dimethylquinoxaline (m. p. 102–104°). The still residue was extracted with ether, and the ether layer was dried over potassium carbonate and allowed to concentrate slowly. No crystallization occurred, and the oil was sub-

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(1) Wm. S. Merrell Co., Postdoctoral Fellow.

(2) Bennett and Willis, *J. Chem. Soc.*, 1960 (1928).