

MacInnes and Shedlovsky's points, and the line e' is their "theoretical" line.

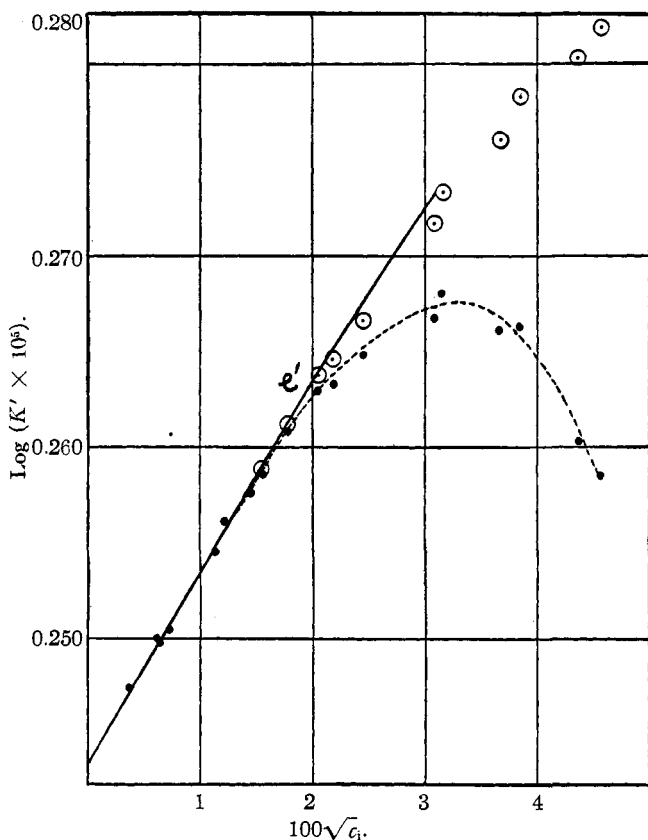


Fig. 1.—○, Viscosity-corrected value; ●, uncorrected values.

It appears that, at the concentrations considered, the mass action expression $f_{\pm}^2 \Lambda^2 c / f_{\pm} \Lambda_x (\Lambda_x - \Lambda)$ will give constant values, provided that Λ is a viscosity-corrected conductivity.

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DERIVATIVES OF DIOXANE

Sir:

In view of the recent article by Butler and Cretcher [THIS JOURNAL, 54, 2987 (1932)] a brief preliminary report of work now completed in this Laboratory seems desirable. We have obtained the symmetrical tetra-

chlorodioxanes described by Butler and Cretcher and have confirmed their findings. In addition, we have obtained several new derivatives. The dichlorodioxane reacts with the Grignard reagent to produce disubstituted dioxanes. As an example, 2,3-diphenyldioxane (m. p. 49°) was prepared and its structure established. This reaction should be a general method of preparing the homologs of dioxane. We are now extending it to the symmetrical tetrachlorodioxanes. Catechol reacts with dichlorodioxane to give a derivative similar to 1,4,5,8-naphthodioxane [Böeseken, Tellegen and Henriquez, *Rec. trav. chim.*, **50**, 909 (1931)]. Only one isomer could be isolated. The evidence is inconclusive regarding the *cis-trans* isomers which Böeseken reported in this class of compounds. We expect to submit evidence in the near future on this point.

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THE DECOMPOSITION OF DIETHYL ETHER AT LOW PRESSURES

Sir:

We have made experiments on the decomposition of diethyl ether at 525° with initial pressures ranging from about 0.15 mm. to 200 mm. and at 462° with initial pressures ranging from about 0.8 mm. to 450 mm. These experiments have been made in a Pyrex vessel immersed in a salt-bath the temperature of which can be controlled within 0.1°, using ether which had been dried over sodium and purified by distillation in vacuum. Runs have also been made with a bulb packed with Pyrex tubing in order to test the homogeneity of the reaction. At the lower pressures it is necessary to correct the runs with packed bulbs for gas, probably water vapor, which is continuously distilled out of the apparatus, whether the ether is there or not; when this is done it appears that the reaction is homogeneous throughout the pressure ranges reported. The results have been compared with the results previously obtained by Hinshelwood [*Proc. Roy. Soc. (London)*, **A114**, 84 (1927)] in the more limited range of pressures in which he worked. Our rates at 525° are somewhat faster, corresponding to a difference in the absolute temperature scale of about 7°; our activation energy is about 60,000 calories compared to Hinshelwood's 53,000; the cause of these discrepancies is not clear. It will be seen that this means that we agree, roughly, with Hinshelwood, and with Steacie [*J. Phys. Chem.*, **36**, 1562 (1932)] at the lower temperature.

When we plot the logarithm of the rate constant against the logarithm of the pressure, we get a curve which does not fall off nearly as fast in the lower pressure region as one would expect on the basis of the usual theory.