

and diluted to 20 cc. After neutralizing with potassium hydroxide, 1 cc. of 2.5 *M* citric acid is added. A current density three or four times greater than for chromium is used. Tartaric acid and glycerol were substituted for citric acid with less satisfactory results. Molybdenum has also been deposited from solutions of molybdic acid in citric and tartaric acids, but the results have also been less satisfactory.

Tungsten has been deposited from aqueous media [Fink and Jones, *Trans. Am. Electrochem. Soc.*, **59**, 461 (1931)] of alkaline nature. It may also be deposited from acid solutions in bright coherent form. Two grams of tungstic acid is dissolved in potassium hydroxide, 5 cc. of 2.5 *M* citric acid is added, then potassium hydroxide to neutrality and 1 cc. of 2.5 *M* citric acid. The solution is diluted to 20 cc. A platinum foil (5 sq. cm.) is the anode and a copper sheet is used as cathode. Similar results may be obtained if sodium hydroxide and tartaric acid are substituted for potassium hydroxide and citric acid, respectively. Tungsten may also be obtained from solutions containing acetic acid and glycerol or glucose.

Work now in progress has shown the possibility of the electrodeposition of columbium and tantalum by similar methods.

More complete data as to optimum conditions of procedure, current efficiencies and the properties of the deposits will be published at a later date.

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THE DISSOCIATION CONSTANT OF ACETIC ACID

Sir:

The new conductivity measurements on acetic acid of MacInnes and Shedlovsky [MacInnes and Shedlovsky, *THIS JOURNAL*, **54**, 1429 (1932)] lead to a dissociation constant that falls off rapidly at concentrations above 0.01 *N*, and the authors are inclined to attribute the effect to a change in the dielectric constant of the solvent. This seems unlikely, if only because such a change would affect both the mobilities and the activity coefficients of the ions, and the resultant effect upon *K* would be extremely small. On the other hand, there are good grounds for thinking that a viscosity correction of some sort should be applied to data such as these, and I have accordingly recalculated the degree of dissociation using the simple viscosity correction, *i. e.*, by employing in place of Λ the value $\Delta\eta/\eta_0$; values for the relative viscosity were taken from "International Critical Tables," Vol. V, p. 20. The results are reproduced in the figure, where the open circles represent the viscosity corrected values, the solid dots are

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

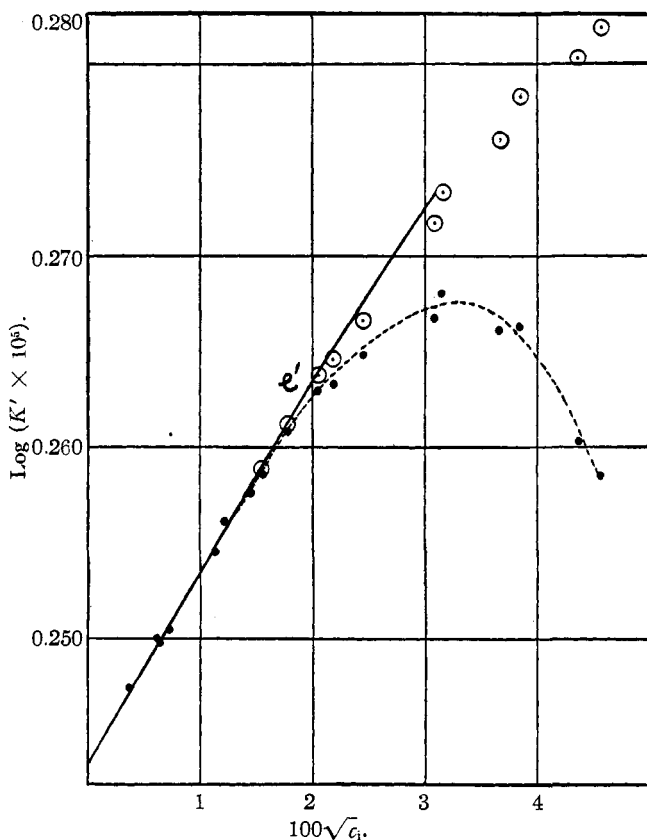


Fig. 1.—○, Viscosity-corrected value; ●, uncorrected values.

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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CECIL W. DAVIES

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-