

## NOTE

**Note on the Potential of the Lead Electrode.**—In a recent communication<sup>1</sup> Randall and Cann describe a determination of the potential of the lead electrode from electromotive force measurements on the cell, Pb (in satd. amal.),  $\text{Pb}(\text{NO}_3)_2$  (aq.) |  $\text{KNO}_3$  (aq.) |  $\text{KCl}$  (aq.),  $\text{AgCl}$  (s),  $\text{Ag}$  (s), in which the electrolytes were flowed over the silver chloride and lead amalgam electrodes.

In an accompanying paper<sup>2</sup> the writer has demonstrated that the potential of the silver chloride electrode so designed is approximately 0.006 volt positive to a silver chloride electrode at equilibrium with the cell solution. On the other hand, laboratory data which the writer obtained several years ago indicate that the lead amalgam electrode practically attains its equilibrium potential instantaneously. It would seem, therefore, that the value of the potential of the lead electrode obtained by Randall and Cann (0.1203) involves an error of approximately 0.006 volt, the difference between the flowing and the equilibrium silver chloride electrode. By applying this correction, one approximates the value 0.1263 obtained by the writer<sup>3</sup> from measurements on the cell Pb (satd. amal.),  $\text{PbCl}$  (aq),  $\text{AgCl}$  (s),  $\text{Ag}$  (s).

There seems to be no necessity for washing the potassium chloride solution over the silver chloride electrode in the cell used by Randall and Cann. The flowing liquid junction could have been maintained just as well by introducing the potassium chloride solution in the arm between the electrode and the liquid junction bulb.

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RECEIVED SEPTEMBER 21, 1931  
PUBLISHED JANUARY 7, 1932

<sup>1</sup> Randall and Cann, *THIS JOURNAL*, **52**, 589 (1930).

<sup>2</sup> Carmody, *ibid.*, **54**, 188 (1932).

<sup>3</sup> Carmody, *ibid.*, **51**, 2905 (1929).