readily for the pittings observed in the electrodes, by Newbery[1] and others.

9. Summary.

Hydrogen overvoltage is due, primarily, to a layer of supersaturated dissolved hydrogen in the electrolyte surrounding an electrode. If, however, the electrode can adsorb large hydrogen gas nuclei to start bubble formation the supersaturation cannot rise to high values, and the electrode will have a low overvoltage. Metals with small adsorptive powers hold small nuclei and have high overvoltages. This explanation is supported by: (*a*) experimental evidence as to the presence of nuclei, (*b*) by observations on fluctuations of the voltage during the evolution of a single minute bubble, (*c*) by a quantitative relation between the size of the bubbles from, and the overvoltage of, platinized platinum electrodes, (*d*) observations on the sizes of bubbles from electrodes of various metals, (*e*) by the agreement, with the prediction of the theory, of the direction of the variation of the overvoltage with the pressure.

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NOTE.

"A Study of the Test for Tartrates Depending upon the Formation of the Copper-Tartrate Complex."—In a previous communication[2] on the same subject, the authors made the statement[3] that comparatively small amounts of phosphates or borates when treated by Böttger's procedure[4] respond in the same way as tartrates. Recent work along this line has shown this statement to be incorrect. A large number of experiments has demonstrated that neither of these anions, even in amounts as high as 500 mg. when subjected to the Böttger procedure gives a blue filtrate. The tests obtained were invariably negative. Efforts to account for the data originally obtained and reported were unsuccessful.

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[1] *Loc. cit.*

[2] THIS JOURNAL, 39, 2623–2630 (1917).

[3] *Loc. cit.*, p. 2629.

[4] "The Principles of Qualitative Analysis," Smeaton's translation, 1906, p. 159.