The Diffusion of Hydrogen Through Metals: Fractionating the Hydrogen Isotopes

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Dr. L. B. Tuckerman of the Bureau of Standards, referring to our note appearing on page 105, February, 1934, *Journal of Chemical Physics*, has called our attention to the fact that diffusion of nascent hydrogen through metals is nothing new. We certainly did not want to give that impression. We only observed what to us was a striking example of a well-known phenomenon. Particularly noteworthy are the researches of Sainte-Claire Deville (Comptes Rendus **59**, 102 (1864)), Cailletet (Comptes Rendus **66**, 847 (1868)), and Graham (Proc. Roy. Soc. **A16**, 422 (1868)), and the later work by Bellati and Lusana (Atti. Instit. Veneto (7) **1**, 1173 (1890); **2**, 987 (1891)). The work of Cailletet is especially interesting. He allowed electrolytic hydrogen to pass through an iron tube and developed pressures of the order of 20 atmospheres.

Our note was specifically directed to the possibility of separating the hydrogen isotopes by means of selective diffusion of these through metals at room temperature. "We decided to determine whether or not the hydrogen thus collected within the metal pillow was substantially the lighter of the two hydrogen isotopes." If we have given our readers the impression that we thought that the diffusion of electrolytic hydrogen through metals was new, we are glad to take this opportunity to correct any such impression.

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