NOTES

Note on the Formation of Ammonia from Active Nitrogen and Active Hydrogen.—Professor A. Koenig and E. Elöd have called my attention to experiments in which they mixed hydrogen and nitrogen, after each gas had been activated separately in a discharge.[1] They did not find ammonia, contrary to results obtained by me.[2] This apparent discrepancy can be explained easily by the conditions of their experiments. One explanation is suggested by Koenig and Elöd themselves, namely, that at the much higher pressures employed by them (10–15 mm. compared to 0.04–0.1 mm. in my experiments) the atomic hydrogen had recombined before reaching the mixing point. This explanation is supported by recent work.[3] Another effect contributing to the discrepancy is that ammonia is decomposed by active hydrogen.[4] At the high pressures of active nitrogen and due to the comparatively long gas exit tube, all of the ammonia (if a trace did form) must have been destroyed. In my experiments more favorable conditions obtained, the condensable gases being frozen out at liquid air temperature immediately following and in close proximity to the mixing chamber. Even so, the ammonia yields were undoubtedly somewhat reduced in the passage of this short space.

BERNARD LEWIS[5]

RECEIVED JUNE 6, 1928
PUBLISHED SEPTEMBER 5, 1928

A Modified Confirmatory Test for Aluminum.—The confirmatory test for aluminum given by Noyes[1] is not quite satisfactory for class exercise, for the test requires much practice and great dexterity on the part of the students. For this reason, Otto[2] sought to improve this cobalt aluminate test.

Noyes' procedure[1] is as follows. The ammonium hydroxide precipitate is dissolved in nitric acid and to the solution a few cc. of water and drops of cobalt nitrate solution are added, in addition to the ammonium hydroxide solution to reprecipitate the aluminum. The precipitate is washed free from sodium salt as completely as possible. The filter paper is then rolled with the precipitate, a platinum wire wound around it and the

[1] A. Koenig and E. Elöd, *Z. Elektrochem.*, **21**, 285 (1915).

[2] Lewis, THIS JOURNAL, **50**, 27 (1928).

[3] J. Kaplan, *Phys. Rev.*, **30**, 640 (1927).

[4] Strutt, *Proc. Roy. Soc. London*, **85**, 219 (1911); Willey and Rideal, *J. Chem. Soc.*, **1927**, 677.

[5] National Research Fellow.

[1] A. A. Noyes, "Quantitative Chemical Analysis," The Macmillan Company, New York, **1923**, p. 190.

[2] C. Otto, THIS JOURNAL, **48**, 1604–1605 (1926).