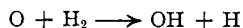


THE PHOTOCHEMICAL DECOMPOSITION OF NO<sub>2</sub>

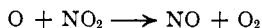
*Sir:*

The band spectrum<sup>1</sup> of NO<sub>2</sub> shows regions of diffuse absorption below 3700 Å. and 2448 Å. These have been interpreted by R. Mecke<sup>2</sup> and V. Henri<sup>3</sup> as predissociation spectra. At 3700 Å. the NO<sub>2</sub> should decompose into NO and a normal O atom, whereas at 2448 Å. the oxygen atom should be in a ('D) state. If these statements are correct, then it should be possible to prove chemically the presence of oxygen atoms. Therefore mixtures of NO<sub>2</sub> with H<sub>2</sub>, H<sub>2</sub> + O<sub>2</sub> and CO + O<sub>2</sub> have been exposed to light of various wave lengths.

With light of wave length below 3700 Å., H<sub>2</sub>O and CO<sub>2</sub> were formed. From the ratio of the quanta of light absorbed to the amount of water formed it was calculated that the reaction



proceeds at least 10<sup>4</sup> times as slowly as the reaction



when the oxygen atom is not excited. With shorter wave lengths (from Cd, Al and Zn sparks) the efficiency of water formation was greater.

From this it may be concluded that in the regions of predissociation oxygen atoms are actually produced. Furthermore, the results obtained confirm the observations of Kistiakowsky,<sup>4</sup> that the probability of a reaction of an O atom with H<sub>2</sub> forming OH + H is small. The experiments with added hydrogen and with added hydrogen and oxygen showed that at room temperature for each hydrogen atom less than two molecules of water are formed.

The details will be given in a paper soon to appear.

FRICK CHEMICAL LABORATORY  
PRINCETON UNIVERSITY  
PRINCETON, NEW JERSEY  
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HANS-JOACHIM SCHUMACHER<sup>5</sup>

## THE ADSORPTION OF COMPLEX AMMONIUM IONS BY SILICA GEL

*Sir:*

In preparing metallized silica gels by the method of Latshaw and Reyerson,<sup>1</sup> it was early found that complex ammonium salts of platinum and palladium were most easily reduced to the metallic condition by adsorbed hydrogen. On the other hand, the ions of nickel and copper do not reduce

<sup>1</sup> L. Harris, *Proc. Nat. Acad. Sci.*, **14**, 690 (1928).

<sup>2</sup> R. Mecke, *Die Naturw.*, December 20 (1929); *Z. physik. Chem.*, **7B**, 108 (1930).

<sup>3</sup> V. Henri, *Nature*, **125**, 202 (1930).

<sup>4</sup> G. B. Kistiakowsky, *THIS JOURNAL*, **52**, 1868 (1930).

<sup>5</sup> International Research Fellow in Chemistry.

<sup>1</sup> Latshaw and Reyerson, *THIS JOURNAL*, **47**, 610 (1925).