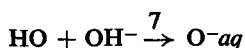
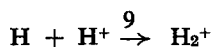




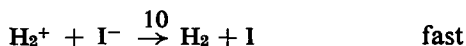
the pH is increased above pH 11 is caused by a simple competition between reaction 3 and reaction 7.



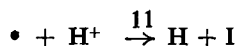
The striking decrease of  $\Phi(\text{N}_2)$ , the increase of  $\Phi(\text{H}_2)$  from zero and the minimum in  $\Phi(\text{I}_2)$  which occur when the pH is decreased below 3.5 are due to two causes. Firstly,  $\text{H}^+$  competes with  $\text{N}_2\text{O}$  for H forming  $\text{H}_2^+$  in reaction 9, which



always oxidizes iodide according to equation 10. Consequently



over this pH range  $\Phi(\text{I}_2) = \Phi(\text{H}_2) + \Phi(\text{N}_2)$  and  $\Phi(\text{H}_2)/\Phi(\text{N}_2) = k_9(\text{H}^+)/k_2(\text{N}_2\text{O})$ . Secondly, small concentrations of  $\text{H}^+$  interfere with reaction (1) so that  $\Phi_{\text{H}}$  decreases as the pH changes from 3.0 to 1.2 but larger concentrations of  $\text{H}^+$  facilitate the formation of H, presumably via a reaction which may be written according to equation 11, so that  $\Phi_{\text{H}}$  increases as the pH is further reduced.



The numerical values of  $k_2, k_5, k_6$  and  $k_9$  and of the ratios  $k_0/k_1$  and  $k_8/k_7$  will be discussed.