The inorganic combined nitrogen in most soils is in the form of ammonium (\(\text{NH}_4^+\)) and nitrate (\(\text{NO}_3^-\)). Nitrite (\(\text{NO}_2^-\)) is sometimes detectable, but the amount is generally very small compared with the amounts of ammonium or nitrate, and it is usually assumed that the quantity present is not sufficient to warrant its determination. However, nitrite has been found to accumulate in alkaline soils after application of high rates of ammonium fertilizers (e.g., Martin et al., 1943; Fuller et al., 1950; Chapman and Liebig, 1952; Duisberg and Buehrer, 1954), and recent work has shown that ammonium inhibits the oxidation of nitrite by \textit{Nitrobacter} species (the second stage in nitrification) and suggests that nitrite accumulation is likely to result from the application of high rates of ammonium or ammonium-producing fertilizers to any soil which has an alkaline reaction (Broadbent et al., 1957; Stojanovic and Alexander, 1958; Aleem and Alexander, 1960). Other forms of inorganic-N, such as hydroxylamine, hyponitrous acid, and imido-nitric acid (nitramide), have been postulated to occur as intermediates in the microbial processes leading to N transformations in soils (nitrification, denitrification, \(\text{N}_2\) fixation, etc.), but most of these compounds are chemically unstable, and they have not been detected in soils. Hydroxylamine is rapidly decomposed in mineral soils by a nonbiological reaction leading to formation of gaseous forms of N (Bremner and Shaw, 1958).

Until recently, it was generally assumed that only a small proportion (<2%) of the total-N in soils was in inorganic forms of combination. However, it is now well established that many soils have the capacity to fix ammonium (i.e., to adsorb ammonium in a manner such that it is not readily exchangeable) (see Barshad, 1951; Allison et al., 1951, 1953; Hanway and Scott, 1956; Nömmik, 1957; Jansson, 1958; Stojanovic and Broadbent, 1960; Walsh and Murdock, 1960), and recent work has shown that some