The most significant recent development of immediate practical importance to the fertilizer industry is the treatment of superphosphate with ammonia, either in the form of the anhydrous liquid or as aqueous solutions.

Although this is a new development from the domestic commercial standpoint, McDougall (16), in 1873, patented the use of superphosphate for the absorption of ammonia from gases resulting from the destructive distillation of carbonaceous material and proposed the use of the product as a fertilizer. Similar processes were patented by Bolton and Wanklyn (4) in 1881, Grahn (9) in 1889, and Besemfelder (3) in 1901. These processes did not achieve commercial success, however, because of the action of superphosphate in absorbing from the gases not only ammonia but also compounds that were toxic to plants.

Several United States patents relating to the treatment of superphosphate with ammonia were issued to Willson and Haff (24) in 1912 to 1915, and at about the same time Gerlach (8), in Germany, carried out some investigations on the reactions occurring in the process. The work of Gerlach and Brioux (6) indicated that ammoniation of superphosphate did not decrease the fertilizer value of the latter material, despite the fact that a portion of the phosphoric acid was reverted to forms insoluble in neutral ammonium citrate solution. In 1924, the Compagnie de Saint-Gobain (7) patented and placed on the French fertilizer market ammoniated superphosphate under the trade name “Superam” (1, 17). At the same time the process was also being investigated in Denmark (2). The process was not used on an extensive commercial scale in the United States, however, until 1928, when cheap synthetic ammonia became available in large quantities.

The rapid growth of the domestic production of ammoniated superphosphate is indicated by the fact that the quantities of