

Other manures, however, contain nitrogen in combinations which undergo decompositions less readily than uric acid. Thus unburned bones yield from six to seven per cent. of ammonia, and dried blood, fifteen or sixteen per cent., while woolen rags and leather yield about as large a quantity. In estimating the value of such matters as manures, the difference in the facility with which they enter into decomposition, must be taken into account. Thus if two large quantities of guano are applied to the soil, a portion of the ammonia may be volatilized and lost, while with leather and wool the decay is so slow, that these materials have but little immediate effect as manures. The nitrogen of blood and flesh is converted into ammonia with so much ease, that it may be considered, almost as available for the purpose of a manure as that which is contained in ammoniacal salts.

Attempts have been made to fix the money value of the ammonia and the phosphates in manures, and thus to enable us from the results of analysis, to estimate the value of any fertilizer containing these elements. This was I believe first suggested a few years since, by an eminent agricultural chemist of Saxony, Dr. Stöckhardt, and has been adopted by the scientific agriculturists of Great Britain, France, and the United States. The values vary of course very much for different countries; but I shall avail myself of the calculations made by Prof S. W. Johnson of New Haven, Connecticut, which are based on the prices of manures in the United States in 1857. In order to fix the value of phosphoric acid in its insoluble combinations, he has taken the market prices of Columbian guano, and the refuse bone-ash, of the sugar refiners, which contain respectively about 40 and 32 per cent. of phosphoric acid, and from these he deduces as a mean $4\frac{1}{2}$ cents the pound as the value of phosphoric acid when present in the form of phosphate of lime. This would give \$1.44 as the value of 100 pounds of bone-ash, and \$1.60 for the same amount of the guano, while they are sold for \$30 and \$35 per ton.

The value of soluble phosphoric acid has been fixed by Dr. Völcker in England, and by Stöckhardt in Saxony, at $12\frac{1}{2}$ cents the pound. This valuation is based upon the market price of the commercial super phosphates of lime. Mr. Way, of the Royal Agricultural Society, however, estimates the value of phosphoric acid in its soluble combination at only $10\frac{1}{2}$ cents the pound; and Mr. Johnson, although accepting the higher price, regards it as above the true value.

In order to fix the real value of ammonia, Prof Johnson deducts from the price of Peruvian guano, at \$65 the ton, the value of the phosphoric acid which it contains, and thus arrives at 14 cents the pound for the price of the available ammonia present. This kind of guano, however, now commands a price considerably above that which serves for the basis of the above calculation; and both Völcker and Stöckhardt fix the value of ammonia at 20 cents the pound. The price of potash as a manure is estimated by Mr. Johnson at 4 cents the pound; but this alkali rarely enters to any considerable extent into any concentrated manures, and may therefore be neglected in estimates of their value.