Mr. Chapman was for a number of years a distinguished short-horn breeder, and is well known and much respected in Canada. About two years since, being appointed to a responsible county office, he sold out the greater part of his herd, a number of very fine animals, which passed into the hands of other breeders.

Manure from the Air.

It is well known that ammonia is the most valuable constituent of Peruvian guano, and that farmers pay a high price for this substance, with which they suplement the manure of the farm. Large leaved plants derive a considerable proportion of the nitrogen which they contain from the ammonia of the atmosphere; fur this substance exists in the air, though the relative amount, as compared with the other constituents of the atmosphere, is but liitle more than appreciable. Now, nitrogen forms four-fifths of the weight of the atmosphere, and nitrogen, by combining with hydrogen in the proportion 17 to 3, forms ammonia; hydrogen is a constituent of water; and if a cheap method of separating it from this fluid and combining it with the nitrogen of the air were discovered, the production of ammonia upon a large scale might be carried on, and the farmer supplied with the most valuable, and, at dresent the most costly of the various manures he employs, Efforts in this direction have been made for several years past, and it would appear that success has now been attained. Two French chemists (M. M. Margueritte and De Sourdeval), have lately communicated to the French scientific journal a paper on this subject, of which the following is an *epitome:*—

Since the remarkable labors of Messrs. Liebig, Schaltenmann, and Kuhlmann, on the fertilising action of ammonical salts, the production of ammonia at a low price has become a problem of the highest interest. But to arrive at this result it is necessary to obtain the nitrogen elsewhere than in the nitrogenous matters which may, for the most part, be employed directly as manures, and of which the limited quantities and elevated price permit only a restricted use.

Atmospheric air is an inexhaustible and costless source of nitrogen. However, this element presents so great an indifference in its chemical re-actions that, notwithstanding the numerous attempts which have been made, chemists have not heretofore succeeded in combining it with hydrogen so as to produce ammonia artificially. The result, so long desired, has been reserved for M. M. Margueritt and De Sourdeval, who have obtained it by employing an agent of which the remarkable properties and neat and precise reactions have permitted them to succeed where others had failed. This agent is baryta of which notice has recently been taken on account of the applications that M. Kuhlmann has made of it in painting, of which no person suspected the part *that it was to be called to play in the development* of the agricultural riches of our country. The manufacture of ammonia is based on a fact entirely new—the cyanuration bairum. It had been believed until the present time that potash and soda alone had the properties of determining the formation of cyanogen; that the earthy alkaline bases—buryta, for example—could not, in any case, from cyanides.

Messrs. Margueritte and De Sourdeval have ascertained that this opinion is entirely erroneous, and that baryta, much better than potash or soda, fixes the nitrogen of the air or of animal matters in considerable proportions. It is already understood that for the preparation of Prussian blue the cyanide of barium presents great advantages over that of potassium, for the equivalent of baryta costs only about the one seventh of that of Potash. *Thus do we find* practically and really obtained the result first announced by Desfosses, and vainly pursued in France and England—the manufacture of cyanides from the nitrogen of the atmospheric air. This solution, so important, depends on the essential difference which exists between the properties of baryta and those of potash; the first is infusible, fixed, porous, and becomes *deeply cyanuretted without loss; the second* is fusible, volatile, and becomes cyanuretted only at the surface, and suffers from volatilisation a loss which amounts to 50 per cent. After the cyanide of barium was obtained, the grand problem for Messrs. Marguerritte and De Sourdeval to resolve was the transformation of the cyanide into ammonia, by means at the same time simple, rapid, and inexpensive. *The following is the operation:*—

"In an earthen retort is calcined, at an elevated and sustained temperature, a mixture of carbonate of baryta, iron filings in the proportion of about 30 per cent., the refuse of coal, tar, and sawdust. This produces a reduction to the state of anhydrous baryta, of the greater part of the carbonate employed. Afterwards is slowly passed a current of air across the porous mass, the oxygen of which is converted into carbonic oxide by its passage over a column of incandescent charcoal, while its nitrogen, in presence of the charcoal and the barium, transforms itself into cyanogen, and produces considerable quantities of cyandine. In effect, the matter sheltered from the air and cooled, and washed with boiling water, gives with the salts of iron an abundant precipitate of Prussian blue. The mixture thus calcined and cyanuretted is received into a cylinder of either cast or wrought-iron, which serves both as an extinguisher and as an apparatus for the transformation of the cyanuret. Through this cylinder, at a temperature less than 300 deg. (centigrade) is passed a current of steam, which disengages, under the form of ammonia, all the nitrogen contained in the cyanid