could be no doubt, then, that the property of soils to remove colouring matters, and organic matters yielding smell from solution, was due to the clay contained in them. Filtration was only a method of exposing the liquid in the most perfect form to the action of the clay, but it was not necessary to the success of the process. In proof of which Mr. Way stirred up a quantity of soil with putrid human urine, the smell of which was entirely destroyed by the admixture, and upon the subsidence of the earth the liquid was left clear and colourless. It appeared, therefore, that the clay of soils had the property of separating certain animal and vegetable ingredients from solution; but was this property the only one exhibited? Mr. Way had found that soils had the power of stopping also the alkalies, ammonia, potash, soda, magnesia, &c. If a quantity of ammonia, highly pungent to the smell, was thrown upon a filter of clay or soil, made permeable by sand, the water first coming away was absolutely free from ammonia. Such was the case also with the caustic or carbonated alkalies, potash, or soda. This was a very wonderful property of soils, and appeared to him as an express provision of nature. A power, he remarked, is here found to reside in soils, by virtue of which, not only is rain unable to wash out of them those soluble ingredients forming a necessary condition of vegetation; but even those compounds, when introduced artificially by manure, are laid hold of and fixed in the soil, to the absolute preclusion of any loss either by rain or evaporation.

But Mr. Way had found that this property of clay did not apply only to the alkalies and their carbonates, but to all the salts of these bases, with whatever acid they were combined. Here again was a beautiful provision; sulphate of ammonia, when filtered through a soil, left its ammonia behind, but the sulphuric acid was found in the filtered liquid—not, however, in the free state, but combined with lime; thus sulphate of lime was produced, and brought away in the water. In the same way muriate of ammonia left its ammonia with the soil, its acid coming through in combination with lime, as muriate of that base. The same was true of all the salts of the different alkalies, so far as he had yet tried them. Thus lime in the economy of nature was destined to one other great office besides those which had already been found for it—it was the means by which the salts ministering to vegetation became localized and distributed through the soil, and retained there until they were required for vegetation. Mr. Way pointed out that, from what he had just shown, it must be obvious that there was no provision for the ordinary salts of lime themselves. It was necessary that when the alkali of a salt is laid hold of by a soil, some provision should exist for the neutralization of the acid with which it was combined; for all other salts lime performed this useful office, but it had nothing to fall back upon for its own salts. Sulphate, muriate, or nitrate of lime, when passed through a soil, would come through unchanged. This, however, did not extend to lime itself, or to its carbonate, when dissolved in carbonic acid, as it is found in most waters. Quicklime, when dissolved in water, is removed by passing the water through clay, or through moist soils containing clay; and carbonate of lime in solution is so effectually removed, that hard water may be softened by the same process.

With regard to the extent to which these actions were capable of being carried, it was not to be supposed, that we could go on filtering indefinitely with the separation of the salts contained in the liquid; on the contrary, the limit was soon reached; but although small in per centage quantity, the power was, in reference to the bulk of the soil, enormously great. He had found that a pure clay would absorb, perhaps, two-tenths per cent. of its weight of ammonia—that is to say, 1000 grains would separate two grains of ammonia; and from reasons which need not then be noticed, a loam, or a well cultivated clay soil, would absorb nearly twice as much. Now every inch in depth of soil over an acre of ground weighed about 100 tons; consequently, 10 inches of depth of such soil would weigh 1000 tons, and would be adequate to combine with, and retain, 2 tons of ammonia, a quantity which would be furnished by about 12 tons of guano. Now, one-sixtieth of this power would suffice for the preservation of the ammonia of an outside dose of guano; consequently, he was justified in saying that the property was practically of immense activity. Mr. Way stated that he had ascertained the extent of the power in different soils, and for the different alkalies. The property was decidedly a chemical one; and although he intended only to state the facts, without entering upon their explanation, he might say that he had every reason to believe that he should be able to develop that satisfactorily at the proper time.

Having thus endeavoured to call their attention to this highly interesting subject, the lecturer went on to point out very shortly the different operations of practical Agriculture, upon which it was likely to throw light.

First, as to manuring: Obviously if there was a provision in the soil for the retention of the salts of manure, and for the ammonia and other products of the decomposition of animal and vegetable matter, the soil was the proper place for those decompositions to go on, and no matter how remote the period when the crop would be taken, it would be perfectly safe to get the manure into the land as soon as practicable after its production. Again, the equitable distribution was a point also which seemed of consider-