

article in the *Standard*, evidently from the pen of a practical man, we quote the following:—

"The daily quantity of sewage now discharging at Crossness, is, on the average, about 500,000,000 gallons, or more than 223,000 tons. But the engines are capable of lifting 280 tons in a minute, or nearly double the average flow. The lift, we may observe, varies from ten to thirty feet, according to the relative levels of the water in the sewer and in the reservoir. Though of lesser magnitude than the Abbey Mills pumping station on the northern side, the Crossness works are quite sufficient to excite the admiration of the visitor.

"The idea of dealing with this immense mass of sewage by a process of chemical precipitation appears at the outset to be little better than chimerical. Yet the idea is entertained in certain quarters, and the subject is being approached in a practical and decided manner. Not only is it thought that the southern sewage could thus be dealt with—deprived of its manurial ingredients as it passes on, and the effluent water allowed to flow day by day into the river, but a like mode of dealing with the northern sewage is held to be quite feasible and certain to return an abundant profit. The mere water supply of London is equal to something like 16,000,000 cubic feet per day. To this we must add a proportion of the rainfall, equal to at least 7,000,000 cubic feet per day, making a total of 23,000,000 cubic feet, or 143,750,000 gallons. What this means may be better understood by saying that such a quantity would cover 176 acres to a depth of three feet. Or it would fill a canal fifty feet wide, ten feet deep, and more than eight miles and a half in length. Let us imagine this mass of water converted into what we call "sewage" by the admission into its volume of the excreta of a population equal to three millions and a quarter. The admixture includes every kind of liquid refuse, and the result is a mass of liquid, repulsive to the sight, and offensive to the sense of smell. The fluid flows on at a rate which would empty the canal in twenty-four hours, were it not that the supply is perpetual. Let us, further, conceive of some modern magician standing by the side of this Stygian stream, waving his wand, and so controlling the nature of the fluid that, while it comes to him all foul, dark, and loathsome, it passes away as bright and clear as a mountain rill. The filth is transformed—first into heaps of shining gold, which fall at the magician's feet, to be distributed among mankind as dividends, and sums in aid of public rates, while further results appear in the shape of waving corn fields and a fertile land. Such, in substance, is the task which is now contemplated, and should the experimental works at Cross-

ness prove successful, the great enterprise will not be allowed to slumber."

After the application of the A B C mixture, about 85 per cent. of water flows off practically pure, it will not be denied that the remaining 15 per cent. of solid matter must retain the great proportion of the fertilising ingredients. No one attempts to assert that it contains the phosphates of the dried fish manure voided by birds; but it contains the voidings of an omnivorous animal, and can be sold at about one-fourth the price of Peruvian guano, which is too stimulating a manure for many crops, and, moreover, it is but following up Nature's system in returning the ingredients that have been withdrawn from it, to feed man and animals. After the separation of the excess of water, the sewage mud deposit is deodorized, mixed with sulphuric acid to fix the ammonia, and finally heat-dried.

Unlike surface sewage, its distribution requires no expensive engineering works for pipes, channels, and various modes of distribution over large tracts of land, to the detriment of the health of those engaged, and of any surrounding population.

As a dry, powdery manure, with little or no unpleasant odour, it may be sent in bags as easily as salt or seeds, to any part of the world by rail, by water, or by cart. It is suitable for almost all kinds of crops, from corn to hops and roots, and especially for all market garden crops; and is much easier spread than ordinary farmyard manure; on potatoes it has a remarkable effect.

There can be no doubt that if the Crossness experiments succeed, not only will the Native Guano Company become one of the financial marvels of the age, but the nation at large will feel the effect. Expectations may yet be disappointed; but if present appearances are verified with reference to the A B C process, the productive power of our agriculture will be immensely increased, and the mass of sewage at present wasted will be made to yield its value. To this we may add the saving of money in the purchase of foreign manure; and altogether, it is impossible to deny that if present hopes are realized, the result will not merely be represented by a successful speculation, but by an enormous increase in the national wealth. We need scarcely add that to augment the productiveness of the soil, affords a surer source of national prosperity than the development of manufactures, and is the best guarantee for the reduction of pauperism. Indeed, with the prospect of a continuous, cheap and abundant supply of useful manure, there is hope of England becoming one day a grain exporting country.

We have made it our business recently to examine closely the Company's operations at their works at Leamington and Hastings. Although the works at Lea-

ington are in a comparative state of abeyance, owing to the temporary interest they have, and interruptions caused by the building operation for the sewage pumping works for Lord Warwick's farm, yet there were no noxious smells or nuisance complained of in the treatment of the sewage and the drying of the mud. The works as at present existing are quite unfit for any extensive successful operations for preparing manure on a commercial scale, and it is not to be wondered at that the River Commissioners reported unfavourably when they visited the works. The Company would have relinquished them long since, had they not wished to oblige the local board until their own arrangements and new works were completed. The Hastings works are, however, a model for neatness, efficiency, and practicability, and far from being objectionable, as their operations are even attractive to visitors, who inspect with interest the chemical operations carried on there. High testimony is borne by the local authorities of Hastings to the fertilising powers of the manure which is made by the Company, and it commands a ready sale amongst farmers and others. Even with the higher expenses which have to be paid at Hastings for carriage of coals, charcoal, and chemicals, a large profit results on the transactions, and the new drying arrangements have enabled a much greater amount to be made weekly. At the existing rate of operations as shown for the month of May, a profit of nearly £2,000 a-year is returned there.

With its increased capital, and the experience it has gained in various quarters since its establishment, the Company bids fair to open up a very prosperous career by its various works at Leeds, Bolton, Southampton, and Hastings, besides the more extensive works at Crossness, which will soon be ready to commence. That there will be a large demand for manure which the Company prepares is evidenced by the numerous orders constantly on their books, the high estimation in which it is held at home as a cheap and efficacious fertiliser for many crops; whilst it is even becoming popular abroad as a dressing for coffee, the sugar-cane, and other tropical crops.

It is computed, on the basis of certain experiments, that the 50,000,000 gallons of sewage to be treated daily at Crossness will result in the production of 400 tons of native guano. This is below the Hastings result, where 100,000 gallons of sewage produce one ton of manure, but the London water supply is large, and there is considerable percolation of sub-soil water into the long lines of intercepting sewers. It will be observed that the Company at Crossness have undertaken to receive the sewage in a continuous flow, so as to represent the maximum difficulty in dealing with the sewage of