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NOTES ON MANURES.

Through those curious changes, produced by the action of life, upon the dead and inanimate material which nature has placed on the crumbling rock, and pulverulent soil, the lime of our Belfast mountains, and the potash, and soda, which enter into the composition of the lofty granite highlands of the County of Down, are brought into the structure of our wheat and potatoes: the dead minerals become a portion of the living vegetables, and are destined in time to build up the temple of the human body, under the influence of a higher and nobler organization, the lime giving solidity to its bony frame work, while the other mineral elements of the soil contribute to the formation of its muscular covering. The growth of crops of wheat and potatoes must, therefore, remove from the soil a large amount of its mineral matters; the cattle which we send to England, to feed the smiths of Sheffield, and the spinners of Manchester, must, also, carry away, in their bones and muscles, a large amount of the ingredients of our fields. It cannot be too strongly impressed upon the mind of every farmer, that every crop he raises, that every weed that springs up in his field, robs it of something; and that, when he is disappointed to find that the seed which he placed in the ground in Spring, yields a starved-looking and unprofitable plant in the harvest, it is because the soil has been exhausted of the materials required to give strength to its stalk, and development to its head. To maintain the productiveness of our fields, we must give back to them the mineral matters taken away; if we succeed in replacing the amount lost, we will renew their fertility, and if we can increase the supply of the elements of nutrition, we will be rewarded by an increased produce. Our farmers, taught by centuries of experience, labour diligently to maintain the productiveness of their fields by manures; but, unfortunately, hitherto their sole attention has been given to the preservation of what is termed "farm-yard manure," while they have treated with neglect that great source of the food of plants, obviously provided by nature as a means of maintaining the unimpaired fertility of the earth, and of supplying food for its increasing population. But it is not the farmer that we should accuse of neglect, when our educated legislators, so directly interested in the soil, give no attention to this important matter, but are content to look to other lands

for that supply of food, which an improved agriculture, and proper attention to the preservation of the home supply of manure, would enable the husbandman to extract from the soils of his own country. How absurd, as I lately took occasion to shew, that we should tax ourselves to construct convenient means by which the very materials, capable, to a great extent, of obviating the deterioration of our fields, may be conveyed into the ocean, and washed away from our shores!

It is a wise and beautiful provision of nature, that the materials which our crops abstract from the soil, for their food—for our support—should not remain in the body for ever, nor even until the body itself be dissolved into its original elements of earth and air; every day, every hour, those materials, having performed the part assigned to them by the Creator, are separated from the living frame, converted again into dead matter, into a form capable of supplying new races of plants and generations of animals, with the materials for their existence. How exquisitely beautiful is this arrangement: and yet, in this country, with a strange indifference, we turn aside from this enormous supply of fertilising ingredients, which nature yearly provides for our use, and our public bodies seem to think it more judicious to send 5,000 miles for the mineral matters contained in the excrements of birds, than to construct reservoirs for retaining the far more valuable guanos which flow away from our cities, and pollute the waters of our rivers; we, however, prefer to perceive the lime, the phosphorus, and other matters, carried away from our cities, after they have made the circuit of the world; for, flowing into the sea, these substances serve for the nourishment of the innumerable plants which inhabit its waters, from the microscopic conferva to the gigantic kelp (*Fucus Giganteus*), which Darwin tells us, sends up a stem 300 feet in length; these plants of the sea, nourished by the substances dissolved in its waters, support countless tribes of fish, which are again devoured by the birds of prey, which, in some countries congregate in immense flocks, covering the islands, along the coasts which they frequent, with their excrements. Where rain is abundant, as on the islands along the Irish and Scotch coasts, it is impossible for this matter to accumulate to any great extent; but in latitudes where rain seldom falls, it has, as on the islands on the west coast of South America, in the course of centuries, produced immense deposits.—

It appears that the people of South America, long before the arrival of their Spanish conquerors, were acquainted with the value of these deposits, as manures, for fertilizing their soils; and that of the Incas, or rulers, of the Peruvians, enacted laws for their careful preservation. An old Spanish authority, Garcilasso de la Vega, whose commentaries were published in 1560, gives us an interesting account of the islands upon which the birds congregate, and the precautions adopted for their preservation:—"In the time of the Incas, the precautions observed for the preservation of these birds were so great, that during the breeding-time no one could land upon the islands, which served them as a resort without incurring the penalty of death—an enactment intended to prevent them from being disturbed and driven from their nests. At no time of the year was it lawful to kill them; and in cases of infraction, the same penalty was awarded. Each island was destined for the supply of a particular province; but, if large, was allotted to two or more. The guano deposits were then apportioned off, and boundaries fixed to each division, in order that the persons of one province or district might not trespass upon the jurisdiction of another. A subdivision under proper authorities was then made for each town, when the dung was distributed in allotments proportionate to the number of residents requiring it." How strikingly do the excellent arrangements of the ancient Peruvians contrast with the shameful negligence of a nation which boasts of her superior cultivation, and yet is forced to avail herself of the guanos preserved by the wisdom of the American Sovereigns, to restore to the fields of Ireland and England the matters squandered by the indifference and carelessness of many generations.

The first formal introduction of the guano of South America to the British public, took place at the dinner of the Royal Agricultural Society of England, at Liverpool, July 1841, when Lord Stanley gave an account of its valuable fertilizing qualities. Before that time, a few parcels had been introduced into the country, and were regarded as agricultural curiosities, but no one could have believed that, before many years, the people of England would, in a single year, expend more than a million of money in the purchase of this article. The successful results which followed the application of the cargoes which arrived in Liverpool and London in the end of 1841.