

nature is changed into organic, and dead inert matter quickened with life, is far beyond us even to conjecture. Suffice it that an express apparatus is required for the process—a special mechanism to convert the “*crust of the earth*,” as it is called, into food for man and beast.

Now, in nature everything moves in a circle—perpetually changing, and yet ever returning to the point whence it started. Our bodies are continually decomposing and recomposing—indeed, the very process of breathing is but one of decomposition. As animals live on vegetables, even so is the refuse of the animal the vegetable's food. The carbonic acid which comes from our lungs, and which is poison for us to inhale, is not only the vital air of plants, but positively their nutriment. With the same wondrous economy that marks all creation, it has been ordained, that what is unfitted for the support of the superior organisms is of all substances the best adapted to give strength and vigour to the inferior. That which we excrete as pollution to our system, they secrete as nourishment to theirs. Plants are not only nature's scavengers, but nature's purifiers. They remove the filth from the earth, as well as disinfect the atmosphere, and fit it to be breathed by a higher order of beings. Without the vegetable creation, the animal could neither have been nor be. Plants not only fitted the earth originally for the residence of man and the brute, but to this day they continue to render it habitable to us. For this end their nature has been made the very antithesis of ours. The process by which we live, is the process by which they are destroyed. That which supports respiration in us, produces putrefaction in them. What our lungs throw off, their lungs absorb—what our bodies reject, their roots imbibe.

Hence, in order that the balance of waste and supply should be maintained—that the principle of universal compensation should be kept up, and that what is rejected by us should go the sustenance of plants—Nature has given us several instinctive motives to remove our refuse from us. She has not only constituted that which we esteem the most loathsome of all things to our senses and imagination, but she has rendered its effluvia highly pernicious to our health—sulphuretted hydrogen being at once the most deleterious and the most offensive of all gases. Consequently, as in other cases where the great law of self-preservation needs to be enforced by special sanctions, Nature has made it not only advantageous to us to remove our night-soil to the fields, but positively detrimental to our health and disgusting to our senses, to keep it in the neighbourhood of our houses.

In every well-regulated state, therefore, an effective and rapid means for carrying off the ordure of the people to a locality where it may be fruitful instead of destructive, becomes a most important consideration. Both the health and the wealth of the nation depend upon it. If to make two blades of wheat grow where one grew before, is to confer a benefit upon the world, surely to remove that which will enable us at once to do this, and to purify the very air which we breathe, as well as the water which we drink, must be a still greater boon to society. It is, in fact, to give the community not only a double amount of food, but a double amount of health to enjoy it. We are now beginning to understand this. Up to the present time we have only thought of removing our refuse—the idea of using it, never entered our minds. It was not until science taught us the dependence of one order of creation upon another, that we began to see that what appeared worse than worthless to us, was Nature's capital—wealth set aside for future production. In our eagerness to get rid of the pollution, we had literally not looked beyond our noses; hence our only care was to carry off the nuisance from the immediate vicinity of our own residences. It was no matter to us what became of it, so long as it did not taint the atmos-

phere around us. This the very instincts of our nature had made objectionable to us; so we laid down just as many drains and sewers as would carry our night-soil to the nearest stream—and thus, instead of poisoning the air that we breathed, we poisoned the water that we drank. Then, as the town extended—for cities, like mosaic work, are put together piecemeal—street being dovetailed to street, as county to county in our children's geographical puzzles—each new row of houses tailed on its drains to those of its neighbours, without any inquiry being made as to whether they were on the same level or not. The consequence of this is, that the sewers in many parts of our metropolis are subject to an ebb and flow like their central stream—so that the pollution which they remove at low-water they regularly bring back at high-water to the very doors of the houses whence they carried it.

But, thanks to organic chemistry, we are beginning to wake up. Science has taught us, that an improved and comprehensive system of drainage is a question that concerns not only our health, but—what is a far more important consideration with us—our breeches' pockets. What we, in our ignorance, had mistaken for refuse of the vilest kind, we have now learned to regard as being, with reference to its fertilizing virtues, “a precious ore, running in rich veins beneath the surface of our streets”—whereas, if allowed to reek and seethe in cesspools, within scent of our very hearths, or to pollute the water that we use to quench our thirst or cook our food, it becomes, like all wealth badly applied, converted into “poison” as Romeo says of gold, to the Apothecary—

“Doing more murders in this loathsome world

Than those poor compounds that thou mayest not sell.”

According to the average of the returns, from 1841 to 1846, we are paying two millions every year for guano, bone-dust, and other foreign fertilizers of our soil. In 1845, we employed no fewer than 163 ships to bring home 270,000 tons of animal manure from Ichaboe alone; and yet we are every day emptying into the Thames 115,000 tons of a substance which has been proved to be possessed of even greater fertilizing powers. With 200 tons of the sewage that we are wont to regard as refuse, applied to the irrigation of one acre of meadow land, seven crops, we are told, have been produced in the year, each of them worth from six to seven pounds; so that, considering the produce to have been doubled by these means, we have an increase of upwards of 20l. per acre effected by the application of that refuse to the surface of our fields. This return is at the rate of 10l. for every 100 tons of sewage; and, since the total amount of refuse discharged into the Thames from the metropolis is, in round numbers, forty millions of tons per annum, it follows that, according to such an estimate, we are positively wasting four millions of money every year—or, rather, it costs us that amount to poison the water about us. Or, granting that the fertilizing power of the metropolitan refuse is—as it is said to be—as great for arable as for pasture lands, then, for every 200 tons of manure that we now cast away, we might have an increase of at least twenty bushels of corn per acre. Consequently, the entire forty million tons of sewage, if applied to fatten the land, instead of to poison the water, would, at such a rate of increase, swell our produce to the extent of four million bushels of wheat per annum. Calculating then that each of these bushels would yield sixteen quarten leaves, it would follow that we fling into the Thames no less than two hundred and forty-six million pounds of bread every year; or, still worse, by pouring into the river that which, if spread upon our fields, would enable thousands to live, we convert the elements of life and health into the germs of disease and death—changing into slow but certain poison that which, in the subtle transmutation of organic nature, would become acres of life-sustaining grain.—*Morning Chron.*