

fresh state. It is applied to the potato crop, spread in the open drill, and the seed dropped on the top of it; the drills are then closed; again plough, which effectually covers the manure; the ammoniacal gas evolved by the manure thus covered, must necessarily pass through the earth, and is consequently taken up by its absorbent powers. The essayist goes on to say, "That by placing a dense body of new manure deep in the ground, a permanent fund of enrichment would be created; for, after all the pros and cons which theory may advance upon the nutriment derived from the air, the ground is and will be found the real laboratory of production. I contend not abstractedly for the old opinion, or against the absorbent power of the foliage; I only insist upon the fact, that the gases are most advantageously prepared in the soil, whence, whether they pass through the roots in the state of sap, or into the air, to be thence attracted by the leaves, is a matter of indifference. The ground, its moisture, the electric actions of the roots, constitute the grand apparatus of nature; and to these, under a wise system of application, which experience alone can teach, we would trust for the establishment of the most perfect system of economy." Marshal Bugeault is a staunch advocate for fresh manure. He says, "Manure, when allowed to putrify for six months, loses half its fertilizing properties, whatever care may be taken to preserve it. When used at once, it causes a continual vegetation, and may be doubled in amount at the same time. The plants produced will restore to the farmer the principles they have drawn from the manure; whilst they themselves have drawn their nourishment in part from the atmosphere, they will afterwards, as food or roots, serve for the food of cattle." M. Noerte, Professor at the Royal Academy of Agriculture at Moeglin, Prussia, notices some experiments of graziers, made by weighing, and which give the following results, indicating a loss of 22 3, or somewhat less than one-fourth:—"After fifty-nine days, there remained of 100 parts of manure only 77,7 of the whole; and thus progressively, but always in a decreasing ratio, the most active decomposition always occurring at its earliest stage." M. Gasparin "considers it a complete illusion on the part of those who, deceived by the intimate admixture of materials in old dung, conceive that it has acquired value; by long fermentation it has lost nearly half its substance, more than half its solu-

ble principles, and two-thirds of its nitrogen." Schattenmann describes an excellent practice, long employed in Switzerland. It consists in "saturating the ammonia of urine and dung with sulphuric acid, sulphate of iron, or gypsum; no trace is thus lost of the active principles of the manure, because the sulphate of ammonia is not volatile; and manure treated in this way possesses much greater powers. All the farmers of Alsace who have adopted this method bear testimony to its value, and desire that it should be more extensively used." The quantity of sulphuric acid required to fix the ammonia in a liquid manure tank may easily be determined, by its subduing the fetid odor. I make one more extract referring to the quality of manure which should be chosen for the several crops of the farm. "It should be remembered that each plant contains particular salts which are necessary to its growth; thus all the grasses and corn have a large quantity of silica in their stems, and of alkalies and earthy phosphates in their seeds. Tobacco, peas, clover, and the stems of the vetch, contain much lime and magnesia; while turnips, marigold, potatoes, contain much alkali in their leaves and stems. If, then, these plants do not find the requisite quantity of these salts in the soil, they cannot be expected to thrive. The best mode of restoring these salts is to bury the residue of the former crops as manure. The dung of pigs fed on peas and potatoes, the dung of cows fed on hay and turnips, contains the necessary saline principles of grasses and turnips. That pigeons' dung contains all the saline principles of grain, that rabbits' dung contains those of herbaceous plants and legumes, and that the solid and liquid excrements of man contain those of all seeds in great abundance, and consequently they are useful to all grasses without exception, and are capable of taking the place of any other manure." Whatever may be thought of the defective management of farm routine, certain it is that there are men at work of profound ability, whose researches must lead to the best results. Let us improve upon them, while we testify gratitude for their labors.

FIRE AND WATER.—The Menai Bridge, says Herschel, consists of a mass of iron, not less than four millions of pounds in weight, suspended at a medium height of about 120 feet above the sea. The consumption of seven bushels of coal would suffice to raise it to the place where it hangs.