

as the huge vehicle of a very minute proportion of ammonia and alkaline salts. Even guano and superphosphate of lime are encumbered with a large proportion of useless ingredients, all of which are costly to purchase and cumbersome, and therefore expensive to carry. Besides, what a large proportion of the manure which we lay over our fields is utterly lost to the crop we want to grow ! What a large per centage is eaten up by noxious weeds, or disseminated through a part of the soil untouched by the roots, and therefore immediately useless ! On the other hand, we know, from clear demonstration, what the substances are which each crop draws from the soil ; we know to a fraction the quantity of each of those substances respectively ; and when we come to compare their aggregate weight per acre, with the quantity of manure which we have laid over that extent of ground, we are astounded at the difference in bulk and weight. If a plant is dried and burnt, the little pinch of ashes that remains, after complete combustion, represents the amount of mineral substances which the plant has drawn from the soil. The rest, which has evaporated in the air by the process of combustion, represents those constituent parts which the plant has derived from the air. Chemistry tells us exactly what substances the ashes contain, and in what proportionate quantities. It is then obvious that either the soil or the manures put on it, or, as is most generally the case, both combined, have supplied those substances to the plant, without which it could not have arrived at maturity. But here we may well pause, and ask ourselves whether, in order to administer to the plant so small a quantity of food—another and a more simple mode cannot be found ; for that quantity, though it be multiplied by the number of plants in an acre of ground, still remains comparatively minute when we compare it with the bulk and weight of the 20 or 25 cubic yards of dung we have laid over it. Again, if we calculate the cost of that manure and the value of the labour which its use has necessitated, we find that the little heap of ashes which has been the result, has cost us an immense sum of money ; in fact, a much higher sum than the pure chemicals of which it consists, could be bought for in the trade.

These considerations have of late years induced both scientific men and practical agriculturalists to turn their attention to concentrated manures, that is, diminishing the bulk of useless substances, serving merely as vehicles to the really fertilizing element, in order to render them more portable, and more energetic, proportionately with their bulk. Abstractedly, this is evidently the goal of our progressive ideas in agriculture ; that is, the simplification of all means, either in labour or manures—the one by concentration of fertilizing energies ; the other by means of ingenious machinery, and especially the use of steam power in field as well as barn operations. It is true to a certain extent that, apart from the primary purpose of restoring the exhausted fertility of the soil, stable and other bulky manures have other advantages, mechanical and thermal ; for instance, in dividing a stiff soil, and imparting to it a higher temperature by decomposition from fermentation. But, with thorough drainage, these advantages have become less important.