

mong the country gentlemen and sensible farmers. Each seems envious of contributing something towards the general stock of knowledge.

As I intend the nourishment of plants to be the subject of this essay, it will be proper to observe, that I have been directed in my researches by a strict attention to the analogy that subsists between animals and vegetables. We know that neither of them can subsist long without air and nourishment.

I lay it down as a fundamental maxim, that all plants receive their principal nourishment from oily particles incorporated with water, by means of an alkaline salt or absorbent earth. Till oil is made miscible, it is unable to enter the radical vessels of vegetables; and, on that account, providence has bountifully supplied all natural soils with chalky or other absorbent particles. I say natural soils, for those which have been assisted by art are full of materials for that purpose; such as lime, marl, soap, ashes, and the volatile alkaline salt of putrid dunghills.

It may be asked, whence do natural soils receive their oily particles? I answer the air supplies them. During the summer months the atmosphere is full of putrid exhalations arising from the steam of dunghills, the perspiration of animals, and smoke. Every shower brings down these oleaginous particles for the nourishment of plants. When they happen to fall upon a very sandy soil, the solar heat exhales the most of them. Hence an additional reason for covering our light soils with herbage during the summer months. On the contrary, when these particles fall upon stiff land, or such as has been marled or limed, an intimate union is produced, too strong for the natural heat to resolve. It is observed that lime mechanically binds a hot sandy soil. We now see that it also fertilises it; but the farmer must not presume too much upon that quality.

The ingenious Mr. Tull, and others have contended for earth's being the food of plants. If so, all soils equally tilled would prove equally prolific. The increased fertility of a well pulverised soil, induced him to imagine that the plow could so minutely divide the particles of earth, as to fit them for entering the roots of plants.

Water is thought, by some, to be the food of vegetables, when in reality it is only the vehicle of nourishment.—Water is an heterogeneous fluid, and is no where to be found pure. It always contains a solution of animal or vegetable substances.

All rich soils, in a state of nature, contain oil; and in those lands which have

been under the plow for some years, it is found in proportion to the quantity of putrid dung that has been laid upon them, making allowance for the crops they have sustained.

To set this matter in a clearer light, let us attend to the effects of manures of an oily nature, and we shall soon be satisfied that oil, however modified, is one of the chief things concerned in vegetation.—Rape-dust, when laid on land, is a speedy and certain manure, though an expensive one, and will generally answer well on a limestone land, or where the soil has been moderately limed. Farmers that live in the neighbourhood of large towns use a abundance of foot. It is an oily manure, but different from the former, containing alkaline salt in its own nature, calculated as well for opening the soil, as for rendering the oily parts miscible with water.

It is observed that pigeons dung is a rich and hasty manure. These animals feed chiefly on grains and oily seeds. Swine dung is of a saponaceous and oily nature, and perhaps is the richest of the animal manures. The dung of ruminant animals, as cows and sheep, is preferable to that of horses at grass, owing to the quantity of animal juices mixed with their food in chewing. And here I beg leave to remark in general, that the fatter the animal, *certis paribus*, the richer the dung.

In order to strengthen my argument in favour of oil being the principal food of plants, I must beg leave to observe, that all vegetables, whose seeds are of an oily nature, are found to be remarkable impoverishers of the soil, as hemp, rape, and flax.

It is usual to talk of the salts of the earth; but Chymistry has not been able to discover any salts in land which has not been manured, tho' oil may be obtained from every soil, the very sandy ones excepted. Marl, though a rich manure, has no salts. It is thought to contain a small portion of oleaginous matter, and an absorbent earth, of a nature similar to limestone, with a large quantity of clay intermixed.

It is a received opinion, that lime enriches the land it is laid upon, by means of supplying a salt fit for the nourishment of plants; but by all the experiments that have been made upon lime, it is found to contain no kind of salt. It is the nature of lime to attract oils and dissolve vegetable bodies. Upon these principles we may account for the wonderful effects of lime in the improvement of black-moor-land. Moor-earth consists of dissolved, and half-dissolved, vegetable substances. It is full