has run in the same rut "this forty year and more." TALPA.

From the Farmers' Gazette.

TO THE YOUNG FARMERS OF IRELAND.

LETTER X.

ROTATIONS.

MY FRIENDS—By the rotation of crops is meant a series of them, followed in succession during a certain number of years, at the end of which the same course is usually recommenced.

The philosophical principle from which we know that, in strict propriety, two crops of the same kind, or of the same habits, ought not to follow each other immediately is, that all organized bodies are, by their Creator's decree, in a perpetual state of change.

We find, for example, a plant extremely low in the vegetable scale, first, acquiring a certain position; on its decay it is succeeded by another differing, perhaps, widely in its nature, as if the same soil could not be congenial to the same species of plants in succession, and so on through an endless succession of changes, each plant seeming to exhaust the soil of the substances peculiarly adapted to its own nourishment, and leaving those only which are applicable to the support of others.

Taking a lesson from the book of nature, then, we ought not to plant on the same soil, in immediate succession, crops of the same kind, knowing the deterioration which would follow.

We certainly see that similar plants can be successively propagated on the same soil; but the natural consequence always is, diminished value.

One forest (of the same tribe of trees at least) should not succeed another, unless the soil be renewed altogether.

Even the longest lived trees have no hereditary right to the soil on which they grow; they have no fixity of tenure—for such is against the law of nature—they die, indeed, where they lived and were matured; there is not necessarily a premature clearance of them from their holdings, but they have no perpetuity of possession for their descendants—no family of plants has a natural right to remain there always.

The earth is hospitable; she receives all classes of plants, if they can find room and food enough within her bosom; but she receives them in turns, and will not surrender any portion of her lands to the exclusive and permanent possession of class.

The newly cleared forests of America show the tendency of the soil to bring forth varied kinds of plants—white clover, grasses, and other plants, which have similar tastes and habits, spring up where the trees vacate their positions.

The excretions from the trees, which had preceded and exhausted the soil of all the nutritive substances suited to their nature, would have been unfit for a new generation of the same kind, which would not find nourishment in the refuse of those elements on which their parents had subsisted.

But this matter, though rejected by them, might be very digestible and agreeable food for the new settlers which might find the materials of a feast where the lineal descendants, or near collateral relatives of the former plants, would starve.

The diversities of taste, with regard to food and habits among plants, plainly point out the necessity of rotations; and as some plants have such a natural dislike or antipathy to others that they *will not rest in the same soil with them*, so others have a natural liking or affinity to others, probably because they have no struggle for the same elements of food, or mutually derive nutriment from the excretions of each other.

It is an established principle among all good farmers, looking to the good condition of the soil, *not to take two crops of* corn* in succession, but to cultivate a leguminous,† or some green crop between the grain crops.

Jethro Tull, who lived about 150 years ago, fancied that crops of wheat, if cultivated in drills sufficiently apart to admit of fallowing the bare intervals with a horse-hoe, might be raised every alternate year on the same soil, for any length of time, and that, too, without any manure, believing that the atmosphere could of itself renew the exhaustions of the ground.

You must, however, be aware, from what has gone before respecting the nature and food of wheat, that it depends much more for support upon the soil than on the atmosphere, though the air conveys to plants many of the elements in which a soil may be deficient—as salt borne from the sea by mists and vapours—and ammoniacal gases by smoke; but this source of supply is comparatively trifling, and the air cannot convey lime nor silica, nor that great element of food—humus. The soil, then, will not acquire those substances by resting, or by being turned over with the plough, they must be introduced by the husbandman.

Any leguminous crop ploughed in when green, after the removal of wheat, would leave in the soil some element of food; but Tull did not think this necessary, and seems to have had no notion of the manner in which plants are fed, substituting repose and cleanliness in the soil for their natural aliments.‡

Clover, though an improving crop to the soil in some respects, is a bad preparation for a succeeding one of the same, or any other similar plant. It ought to intervene between corn crops, unless some peculiar circumstances should render a deviation necessary.

It has this great claim to being so introduced, that it does not consume much of the silica which the corn crops so largely use; but it feeds principally upon substances which they take more as condiments with their general dietary, than as principal sources of nourishment.

We have high authorities for apprehending that clover and turnips (which are by no means such exhausters of the *soil as wheat) are failing on light soils in* the Norfolk four-shift rotation, which has deservedly been such a favourite system of practice.

In Germany, some farmers now introduce clover (though confessedly an ameliorating crop to the soil,) but once in 7 or 8 years. How much stronger, then, is the objection to Tull's plan of sowing every alternate year wheat, which, admittedly, is a very impoverishing crop.

The nature of the soil generally determines the system of rotation, whether it be one of 4, 5, 6, or more years. A very light, poor soil, requires more rest than a heavy one, or a loam of medium quality; and therefore, on the former description of soil, pasturage for sheep, during the two last years of a short rotation, may be desirable.

On a strong loam, there may be many changes in succeeding series of rotations; such as—

FIRST SERIES—1st. Potatoes; 2nd. Barley; 3rd. Clover; 4th. Wheat:—while in the

SECOND SERIES—Parsnips, or drilled beans, may be substituted for potatoes; or a six-crop rotation be thus arranged, by which clover will only come once in six years. 1st. Turnips, potatoes, or cattle beet; 2d. Wheat, or barley; 3rd. Clover; 4th. Oats; 5th. Beans; 6th. Barley, or wheat.

In appropriate soils, rape, cabbages, carrots, and other plants, would have their claims in the rotations; so would vetches, which act so serviceably in preventing evaporation from the soil; therefore it is impossible to lay down any fixed order, which various circumstances might render it necessary to derange.

Where certain crops are peculiarly suited to the soil, as beans on very strong clay, they must come in the order most convenient to place them in, with respect to themselves, and the crop immediately to follow; and there must also be a due proportion preserved between the rotations, *and the quantity of manure which* the farm can supply to them.

It is enough for me to press upon your notice the general principle of variation in the cropping, and regard to the nature of the soil and the elements of manure which it contains in itself, or which you have it in your power to afford to it.

As an ameliorating leguminous crop for cattle-feeding in summer, clover, on

---

* Very decidedly not of wheat, because, from the length of time during which it is in the ground, and the weight of its grain, it is the most exhausting of the grain crops.

† From *legumen* (pulse) including pease, beans, vetches, clover, lucerne, and sainfoin.

‡ Fallowing is almost exploded as a system, and ought not to be adopted, unless where there is want of capital to provide cattle and suitable accommodation for creating manure, and no desire to employ labourers for weeding and hoeing, and other extra work, which the green crop system demands.