WORMS AS AIDS TO THE FARMER.

In a very interesting work just published by Professor Darwin upon the common earthworm and its functions in the economy of Nature, the following remarks occur:—

"The disintegration of the particles which compose the earth, and the denudation or laying bare of the land by the removal of these disintegrated particles to lower levels, are operations in which worms play a very noteworthy part. The dark colour and fine texture of vegetable mould is largely due to the action of worms. Rocks are disintegrated by the humus acid of decaying vegetables, and it appears that similar acids are generated within the bodies of worms, while their action is facilitated by the continued movement which the particles of earth undergo through the action of worms. Even the triturating process to which moderately small fragments of stone are subjected in the gizzards of worms must have an important ameliorating effect on the soil. There is good evidence, observes Mr. Darwin, that on each acre of land which is sufficiently damp and not too sandy, gravelly, or rocky for worms to inhabit, a weight of more than ten tons of earth annually passes through their bodies and is brought to the surface. The result for a country of the size of Great Britain, within a period not very long in a geological sense, such as a million years, cannot be insignificant; for the ten tons of earth has to be multiplied first by the above number of years, and then by the number of acres fully stocked with worms; and in England, together with Scotland, the land which is cultivated and is well fitted for these animals has been estimated at above 32 million acres. The product is 320 million tons of earth.

"Though the work of earthworms is chiefly manifested in the little towers or castings which they build up outside their burrows, yet, paradoxical though it may seem, the general effect of their labour is to reduce inequalities and to level the ground. The finest particles of earth are washed completely away from these castings, particularly from those on inclined surfaces; and whenever castings get dry and dusty, they become the sport of the winds, so that, sooner or later, they get transported to lower levels. There is no better illustration of this than that afforded by the gradual though certain disappearance of the furrows and ridges from fields that were formerly ploughed, but have for a long period been in pasture."

How efficiently the worm assists the cultivator of the soil is a point on which Mr. Darwin lays no light stress. Worms prepare the ground in an excellent manner for the growth of fibrous-rooted plants and for seedlings of all kinds. They periodically expose the mould to the air, and sift it so that no stones larger than the particles which they can swallow are left in it. They mingle the whole intimately together, like a gardener who prepares fine soil for his choicest plants. In this state it is well fitted to retain moisture and to absorb all soluble substances, as well as for the process of nitrification. The bones of dead animals, the harder parts of insects, the shells of land-mussels, leaves, twigs, etc., are, before long, all buried beneath the accumulated castings of worms, and are thus brought, in a more or less decayed state, within reach of the roots of plants.

Mr. Darwin's concluding words are a simple tribute to the industry of the earthworm. "When we behold a wide turf-covered expanse we should remember that its smoothness, on which so much of its beauty depends, is mainly due to all the inequalities having been slowly levelled by earthworms. It is a marvellous reflection that the whole of the superficial mould over any such expanse has passed, and will again pass, every few years through the bodies of worms. The plough is one of the most ancient and most valuable of man's inventions; but long before he existed the land was, in fact, regularly ploughed, and still continues to be thus ploughed, by earthworms. It may be doubtful whether there are many other animals which have played so important a part in the history of the world as have these lowly organised creatures."

The horny-handed ploughman, as he trudges along behind his "earth-made implement," ever and anon exposes to the light of day his humble and ancient prototype, the earthworm, Nature's own ploughman. From time immemorial, long before feudal systems arose—long even before man, the maker of feudal systems, appeared upon this planet—the blind, deaf, and sluggish earthworm had established his proprietary right in the soil. In silence and in darkness he has pursued the even tenor of his way, reducing a mound here, filling up a hollow there, and levelling everywhere. As he has laboured beneficially in the past, so he labours now, and so we believe he will continue to work for long ages to come. Cowper tells us of the "mound raised by the mole, the miner of the soil," but Darwin, in his latest work, has told us of the enormous earthworks executed by an animal who is far below the mole in organisation as above it in the stupendous effect of his works. For the earthworm is, in all verity, lord of the soil; he holds it by every right recognised by man, he makes a good and noble use of his inheritance, and in taking leave of one who is indubitably a farmer's friend, our very admiration for his industry wins from us an expression of the wish "Long may he flourish."