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DR DARWIN'S new book is fitted to surprise as well as to charm most readers. Its title is "The formation of vegetable mould through the action of worms." Uninformed laymen may be inclined to think that the great naturalist might have turned his attention to some more worthy subject. Most people despise worms. Some shudder at the sight of them. The florist wages a constant war against them as a garden pest, and the farmer rejoices to see the trains of crows that settle in the new-turned furrow, and tear them from the loosened soil. Universally they are regarded as the most ignoble of all God's creatures. DR DARWIN furnishes in his new book a new view of the character and function of the worm, which falls as a rebuke upon the arrogance and the ignorance of man. The worm is here revealed as nature's ploughman. He is an indefatigable toiler, doing at once more effective surface work, and cutting far deeper than the strongest and heaviest subsoil plough or the finest harrow can accomplish. If they only knew it, he is the farmer's and the gardener's best friend. His number, fortunately, is legion, and is always most formidable where the soil is richest and is best tilled. It may, indeed, be taken as one explanation of the difference between the productiveness of spade dug and ploughed land that, in the former the number of worms more rapidly multiplies than in the open field, and thus the gardener commands the service of a more numerous army of fellow-labourers than the farmer does. DR DARWIN believes that the number of worms who are at work in an acre of well-tilled garden ground exceeds 50,000. In corn fields the number is not supposed to be more than 25,000 an acre. In pasture lands there appears reason to believe that the number of worms is much larger than in wheat fields. It is probably one reason why land lying fallow is enriched that these hordes of unobtrusive fertilisers of the soil are left uninterrupted at their work.

Every tyro in natural science is aware of the wonders that are effected in the seas of the torrid zones by the patient, ceaseless toil of the coral worm. Reefs are built up in mid ocean which grow into great islands covered with vegetation. In the fertilisation of these

worm has a share, though, how it is conveyed across thousands of miles of sea, therefore an element which is fatal to its existence, remains a puzzle, which even Dr. Darwin does not attempt to solve. But the earth worm is daily performing on land exactly a similar work to that which the coral worm achieves with greater rapidity perhaps, and with more obviously startling results at sea. It builds up a new crust on the face of the earth, it changes the character of the soil, restores to it the elements which vegetation extracts, and adds to its quantity, converting alike the hard rock and the decaying vegetable to its purpose. It is claimed as the friend of the archæologist, for whose researches it preserves by the friendly coating it is continually spreading over the surface of the earth the once unappreciated antiquities of ruined cities. How many antiquaries would suppose that it is due to the patient labours of earth worms that we owe the preservation from destruction of the tessalated pavements of the old Roman villas, of such forgotten cities as Abinger and Silchester, overthrown sixteen hundred years ago, only to be brought to light within recent memory? What farmer or gardener would be willing to admit that every particle of the soil he tills is passed through the bodies of worms every few years, and is made the richer for the process? Yet all these wonderful facts Dr Darwin, in this remarkable book, which contains the record of a lifetime's observation, extended over a very wide area, most conclusively establishes. Everyone is familiar with the tiny-coiled heaps of fine mud which may be seen turned up on the grass plots, or on the garden walk in a spring or summer morning. The schoolboy angler in search of bait knows that the burrow of a worm is underneath, and that if he puts in his spade quickly he may be able to catch the object by which, if the weather is favourable, he may decoy some lusty trout. These delicate spiral mounds are the castings of the earth worm thrown up as the result of its nocturnal burrowings. It seems to demonstrate as the result of Dr Darwin's observations and experiments, that like some of the lower types of humanity, such as the digger Indians, the worm swallows great quantities of soil in order to appropriate to its use such fatty matter as it contains. At other times it lives on a vegetable diet, and appears to be extremely fond of decaying leaves, which it prepares for digestion by an elaborate chemical process. It is constantly during its busy seasons drawing such leaves into its burrows which may be seen for a few inches near the surface to be carefully lined with such decaying matters. At other times when the worm is burrowing it passes what for its size are great quantities of earth, sometimes brought from considerable depths. Sometimes a worm's burrow extends to the extreme depth of 5 feet—Dr Darwin mentions one case in which the hole was traced 66 inches below the surface — terminating in a little cavity in which sometimes two or more worms may dwell together. The earth dug out of these holes is thrown up to the surface. Castings have been found accumulated at the mouth of single burrows in this country weighing from 1·37 to 3·98 ounces. The book is illustrated by prints of castings, transferred from photographs, which stood 3 inches high and weighed nearly 4½ ounces. These were obtained in the Neilgherry Mountains, in Southern India, and were the product of a worm which sometimes grows to the length of two feet, and is of the thickness of a man's finger. Dr Darwin enters into elaborate calculations to show that "on each acre of land which is sufficiently damp, and not too sandy, gravelly, or rocky for worms to inhabit,