MR. DARWIN'S little volume on ‘The Habits and Instincts of Earth-Worms’ is no less marked than the earlier or more elaborate efforts of his genius by freshness of observation, unfailing power of interpreting and correlating facts, and logical vigour in generalizing upon them.

The width of his sympathy with nature is not bounded by the limits which conventional taste or inherited prejudice too often assigns to the study of natural objects. It is not because such and such forms of life are rare or beautiful, or complex or exotic, that they kindle his enthusiasm, or keep his interest; for the strength by day or night is the same.

None has proved too humble or too repulsive in popular estimate to awaken his interest and concentrate his powers of observation. In the economy of life nothing is common or unclean to one who has learnt to view nature as a whole—various in function, but uniform in structure and design. In what is popularly thought a lower grade of life it may be shown that there is a use, an adaptation to an end, and a resulting beauty which may reverse the verdict of vulgar prejudice. Animals even more lowerly organized than the worms—namely, corals—have built up reefs, islands, and continents from the bed of the ocean, as Mr. Darwin was the first adequately to recognize and to explain. He now comes before us to do justice to an order of tollers a more despised, and even cast out as evil. In point of structure the worm, as he shows us, presents an interesting object of study. In its intelligence it holds no mean rank among living creatures, and in its labours are involved results which it behoves us to look upon with wonder and gratitude.

The main purpose of Mr. Darwin’s work is to point out the share which worms have taken in the formation of the layer of vegetable mould which covers the whole surface of the land in every moderately humid country. Though it may rest upon various subsoils, and differs but little in its general aspect—being for the most part blackish in colour and having but a few inches of thickness—one of its chief characteristics is the fineness of the particles of which this mould is composed, and this is to be seen whenever a field long disturbed is freshly turned up by the plough. Now, although of the highest antiquity, viewed as a whole, yet, as regards permanence, the component-particles of this superficial structure of earth have been going on in process of removal at a rate by no means tardy, being replaced by others due to the disintegration of the underlying materials. Nature’s ploughman, the earth-worm, has been for ages at his humble but beneficent work.

As early as the year 1837 a paper was read by Mr. Darwin before the Geological Society of London, in which it was shown that small fragments of burnt mire, cinders, &c., which had been thickly strewn over the surface of several meadows, were found after a few years buried in a layer some inches beneath the turf. On the suggestion of a friend, Mr. Wedgwood, of Maer Hall, Staffordshire, that this appearance of burning was due to the large quantity of fine earthy matter continually brought to the surface by worms in the form of castings, he was led to institute experiments which convinced him that all the vegetable mould over the whole country has passed many times through, and will yet over and over again pass through, the intestinal canals of worms. Hence, he infers, the term animal mould should be in many respects more appropriate than the vegetable mould. His observations during later years, kept up with his characteristic patience and acumen, aided by the suggestions of friends and fellow-students of nature, are embodied in the interesting monograph before us.

The anatomical structure of the widespread, familiar, yet rarely scrutinized order of annelids (illustrated in fig. 1) shows the adaptation of the worm to its life-long task of burrowing. The isomorph body is made up of from 100 to 200 almost cylindrical rings or segments, each furnished with minute bristles. Having a well-developed muscular system, worms can, by contact with the surrounding earth, crawl or work themselves backwards as well as forwards, and by the aid of their affixed tails can retreat with extraordinary rapidity into their burrows. At the anterior end of the body is seen the mouth, provided with a slight projection known as the lobe or lip, which is used for prehension. Internally behind the mouth there is a strong pharynx, which is pushed forward when the animal eats, according, according with the protrudable trunk or proboscis of other annelids. The pharynx leads into the oesophagus, which has on each side of the lower part three pairs of large glands capable of secreting a

surprising quantity of carbonate of lime. Nothing correspon- 
ding occurs in the case of any other animal. The caecum is 
enshrouded in most species by the heart-like tissue, with 
the exception of the mammalian caecum, the caecum of 
which is covered by the outer integument. The leaf-like 
structures are found in the majority of species, but the 
inner structure is more common. The outer integument is 
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