

"OUR FELLOW-WORMS."

BY MORDECAI D. COHNAT.

There used to be an orthodox old lady in Cambridge (Mass.), who would never permit the caterpillars in her trees to be destroyed. "They are our fellow-worms," she used to say, and devastation resulted from her garden. The caterpillars, in a mass, were rather her look and manner than her fellow-worms: human interests were sacrificed to them. The poet Cowper wrote:—

"I would a caterpillar on my bed of herbs,
Th'ough apt to crawl with polished manners as I see none,
The more the ordinary one the less upon a worm."

But with equal justice he might have set foot on every worm which destroyed leaf or fruit necessary for the health and welfare of man.

But, when ignorance says falsely, "They are our fellow-worms," knowledge may say the same truly, at any rate of the earthworms, now that Darwin has told us the history and romance of those lowly contemporaries. In simple prose, the great man tells the facts about the worm, quite unromantic of the picture that for others illuminates his book,—the greatest scientist of his century bowing his gray head for years to study of the humblest form of life. Because the worm is a mechanical animal he must sometimes watch beside it through the night. While the world slumbers, the astronomer lends his telescope to starry galaxies, but he finds there no greater vision than he whose scientific vigil is beside a pot of earthworms. What is an inanimate star to this dawn of organization, this genesis of color and form, footprint on a planet of the brain that distinguishes and selects? The earthworm brings but one little functional power superior to all that preceded it,—sensitivity. Like inorganic nature, it is blind and deaf; but it can feel the light it sees not; it has sensitive touch, it can suffer. Suffering means a knowledge of good and evil,—as early was the fruit eaten! To seek pleasure and escape pain is beneath the aspiration of animate nature: it will be the law alike of the self-created man and the epicurean. All civilization will be but a system of contrivances to avoid pain and secure happiness.

The dignity of the worm has never been without some recognition by man. It was of old a symbol of destruction. It passed from the gloom of Job, who said to the worm, "Thou art my mother," to Jesus, who pictured Gehenna, whose worm doth not. In Egypt the little head of the gourd suspended into a pith, the all-devouring serpent, and it gave Dante and Milton their name "Worm" for Satan. The Rabbin brought together the Worm and Solomon (just and greatest) in their legend that, though that king, leaning on his staff after he was dead, deceived the gods, he could not deceive the worm. The uncolored pearl went on building the temple, thinking their great master was still alive; but the worm gnawed the end of his staff, and down tumbled Solomon. Christians represented Herod as having turned to worms. Many myths of this kind preceded Victor Hugo's "Epic of the Worm," which Bayard Taylor translated:—

"God having made no worms, I make you worms,
Thou'g'st not, your nameless names from my stinks,
You do I give as I see."

Low in the light, man in the dark space,
And justice, flowing round this year planet,
And stand your witness.

"When the star fallen, man would be wrong to think
That the grave's worms cannot seek glory think,
Thought and I are one."

While the life of "beast the marble mark I like,
I live as none the star within the sky,
The light on the star."

Such has been the epic of the worm in the past,

—the passing away of the glory of the world under the remorseless gnawing of time. But in our century poetry becomes prophetic; its eye caught the glimpse of a manly unity which included the worm and the universe in one vast circle of life. The first lines of a new work might well be written by Shelley:—

"The spirit of the worm within the soil
Is love and worship blest that worketh good."

The leaves thence floated in the air till it caught the ear of Robert Browning, and these gained a variation:—

"But the living worm within the soil
Was stouter than a human fist
And its work, I will dare to say."

But before that Browning had measured the pulse of the universe with this lowly form:—

"Dear me that, thou shalt better,
Thou'rt so just thou wrong a worm."

That there have been these preludes to the new epic, whose materials Darwin has gathered and sifted; and this new song will reveal the worm to man as a destroyer. It knows not the living. It hurries in grave to bring back into activities of life the useful substances which man, in earlier life expeditious, buries there. The worm is the resurrection and the life for such systems to prison. Things hard and useless for the life of man,—stones, ruins,—it buries, but converts organic remains into manure, and brings them to earth's surface, where they may bloom again and breathe in fragrance and happy work.

The worm is apparently the first form in nature that ever earned its living by work, and, like every faithful worker, never off in serving itself. It is weak and timid, without eyes, ears, feet, teeth, or weapons of defense. It can only lay hold of a thing by crawling. And this slow, small thing, without shield or shell, set to work on a granite world, has surrounded it with a rich soil, enabled it to put forth its variegated carpet, and to evolve forms beneath which the richest are buried. The service done by the worm for man has naturally attracted the attention of theology. A generation has not elapsed since theology was looking earnestly upon the man to whom it now repairs to beg a little help. An ingenious writer in the *Quarterly* argues that the work of the worm must have been providentially designed, in anticipation of man, because the worm does not do the best for itself while doing the best for man. Such is the fact. The worm swallows vast quantities of mud, chalk, etc., to get the small nutriment in them, when it might get the food it prefers by chewing itself to the vegetal world. It has gone on for ages eating dust, though the vegetal supplies have increased. It must, says the theologian, have been loaned to such self-devoting work by a higher power. But the theologian forgets that what is originally adopted from necessity often survives as habit. There are human tribes that shakably go naked, even in the cold, after clothes are offered them; others that keep the Sabbath rigidly after it has become an impediment. We can understand the force of habit among our fellow-worms; but it cannot be shown that man might not have been better off if the earthworms could have varied the instincts under changed conditions.

Man is prone to personify in nature the mental order derived from nature, and to imagine an invisible man at work there. And, if he did not regard this invisible man superstitiously, it would be true enough to say that an intelligence like his own is at work in nature. In the profusion of one animal, the affection of another, the maternal instinct of another, it has worked. Human hearts

that a breed might be formed of individuals having, with few exceptions, the full eye man's frontal organ?

And, if we give up the principle in this case, no shadow of reason can be assigned for the belief that variations, either in nature and the result of the more general laws, which have been the ground-work, through natural selection, of the formation of the most perfectly adapted animals in the world, were instinctively and specially guided.

Professor Jan Quid wishes to believe that "variations have been led along certain hereditary lines like a stream along definite and fixed lines of obligation." He says Dr. Darwin, in this view the plasticity of organization which leads to many hereditary deviations of structure, and the robustness power of reproduction which causes the struggle for existence, would be spontaneous laws of nature; whereas, an omnipotent and omniscient Creator must have ordained and furnished everything. There the difficulty remains, as insolvable (Dr. Darwin considered) as that of free-will and necessity.

Despite Dr. Darwin's mass of facts, we are distinctly of opinion that his present work will not be concluding to any but Darwinists. He attempts to prove too much; as he himself confesses, "to consider the subject under this point of view"—"by original identity of what, both, then—" is enough to swallow us down with amazement." So it is, indeed; but will more readily lead to reflect on what infinite facts we need a hypothesis to guard. Dr. Darwin is very modest; he only goes to forward his hypothesis; and he proceeds to try other books, one on the variability of organisms in a state of nature, the other on the struggle for existence and the law of natural selection. But at present we again believe that because the selected organisms have a great tendency to vary—therefore, in the lapse of infinite ages, the dog was developed out of the wolf, or the wolf and the fox, which themselves came from the modification of some earlier form, and vice versa, tracing backwards to the ape.

It is a great mistake which Dr. Darwin demands from us, no less, in fact, than the abandonment of any real difference between species and variety, making species merely a permanent variety. The polygamist at once see the weak point here, and see, in M. Pouchet's words, that "variation under domestication throws no light on the natural modification of species." The fatal objection is, we all know, that while a cross between the most widely-separated varieties is invariably sterile, a cross between the most closely allied species is always sterile. This was the old argument of Lill and Giddies against the vulgar's claim to be admitted as a brother. "He is a distinct species; for the cross, though often fertile for a generation or two, invariably dies out soon unless crossed from either of the parent stocks." This M. Quatrellage and other monogamists met by a denial of the fact; and as Dr. Darwin would reply to the supposed primary difference between species and variety: "It is impossible to prove a negative; and you have no more right to assert that hybrids are never fertile than I have to say that they are fertile if made under conditions of success, and to maintain that under new circumstances a new form might be established which should not be a mere temporary variety." On this point we await Dr. Darwin's forthcoming book. At present, he is content to remind us, that not all varieties give a fertile cross, and let Fallax may be right in asserting that species, when having the long demonstrated, has their natural tendency to sterility increased. He also adds, that too much has been made of the supposed radical difference between species and variety. Till lately, while it was well known that some allied animals are very differently affected by the same poison, e.g., the sheep and the goat, it was believed that varieties all faced the same; now, however, it has been proved that immunity from certain poisons stands in some cases in correlation with the colour of the hair—e.g., white cattle were poisoned by certain plants, and cattle with white spots had the spots influenced, the rest of the skin remaining sound, after eating the same plants. The period of gestation, too, assumed to be the same for all varieties, has by recent research been proved to differ in some cases. Are we then to conclude that there is no such thing as species in the old sense of the word, and that all we see about us are permanent varieties, brought about by natural selection, shedding at the hereditary variations of the individual, and throwing off any variations which are found useless? It is, perhaps, as well to leave the question as to species and variety till Dr. Darwin is able to deal with the variation of organisms in a state of nature.

Meanwhile, we recommend the book, not only to those who care for the author's peculiar theory, but to all who are interested in

natural history. There is a vast mass of facts brought together as a first instalment of prime justification for the Origin of Species. We all remember that that remarkable book dealt more in assertion than in proof. Dr. Darwin has now supplied half the proof; indeed, for those who are willing to accept the analogy of domestic variation, he has thoroughly established his case. We prefer, as we said, to wait till he has treated of animals in a state of nature in the same exhaustive manner. It is unfortunate. The amount of facts which he has brought together is perfectly marvellous; and many of them—all, for instance, that he says about the bones and the legs, and their variations—are full of interest for the general reader. Whether or not we accept Dr. Darwin's theory, it is interesting to look at his findings, which, when first taken to India, will fit us as displaced in the ground by the trunk, in two or three generations not only fall off in pluck and tenacity, but lose the underlying character of their lower jaws. Insects, too, deteriorate very more rapidly in hot climates. Our findings, by the way, are greatly reduced in size owing to the discontinuance of hibernating. Peasants, again, come from Spain; but a few centuries have so modified them that there is no trace now in Spain corresponding to figures with our peaches. Grasses vary some very few days. In mountain ranges and islands they always get small. In the islands off Virginia they have almost away (scarcely not owing to the soil) almost to the day of Britain. In the Falkland Isles, again, they soon become so weak to be used with the same for catching wild cattle; or which proper horses have to be imported from La Plata. Every horse there is such that all over the vast island area from Calcutta up to old China no full-blood horse is bred. The really best of Borneo, by the way, is not a single animal; you see tallish horses and middle horses and other "varieties" killed out, there would be breeds possessing characteristics combined. These are samples of Dr. Darwin's facts—very interesting, we repeat to the all sorts of readers. They are accompanied by chapters which can only be read with pleasure by those already well acquainted with the subject—the chapter, for instance, on "Fragments"—a hypothesis resting on the assumption that all organs, again, besides having the power of growing by addition, throw off free and minute copies of their contents, *i.e.*, "gemmules." This hypothesis shows such facts as variability, dormancy, reversion, or sterility, &c.; and in its favour Dr. Darwin quotes Dr. Whewell, to the effect, that a good hypothesis is as valuable in the investigation of truth as a well-chosen relation is in mathematics. We deal fully with chapters like this a long while within reasonable limits of space. Every one knows that Dr. Darwin, when he writes for the philosopher is sure to win his attention. We have said enough about the more popular part of his book to show that it gives him a claim on the general, and on the wholly scientific, reader.

GOD IN HISTORY.*

THIS great work comes to us with a double recommendation. It is, we consider, the most masterly, if not the most masterly, achievement of Baron Bunsen's genius. It is rendered into good and graceful English by the accomplished translator of *Taste's Germany*, and, lastly, it is prefaced by an introduction by Dean Stanley. In addition to these recommendations, we may remark that the chapters on the Indian Religions have been revised by Professor Max Müller, and that the illustrations from the classical poets are from the elegant pen of Professor Coleridge. In a few brief sentences, which we shall quote, Dean Stanley puts before us his view of the character of Baron Bunsen as a theological writer, and the two key-words of this, his great work, which expresses "more than any single treatise he has left, that which was the central idea of all his various works—the development of the revelation of God through all the various phases of human history." "No theologian of this generation," continues the Dean, "had a truer reverence for the Bible, both in the Old and New Testament. What others talked of their abridgement of it, he proved it by his untiring labour to bring out its meaning, to apply its lessons, to illustrate its truths and its history, from the resources of a knowledge unusually vast and varied, from the devotion of a heart and life of unusual depth and expansion. This is one side of the book here translated. But not less clearly does it bring out his equally strong conviction,

* *God in History; or, the Progress of Man's Work in the Moral Order of the World.* By G. C. F. Baron Bunsen. London: Longmans, 1866.