

## "OUR FELLOW-WORMS."

BY MONCURE D. CONWAY.

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 radiated from her garden. The caterpillars, in a sense, were rather her lords and masters than her fellow-worms: human interests were sacrificed to them. The poet Cowper wrote:—

"I would not enter on my list of friends,  
Though graced with polished manners and fine sense,  
The man who needlessly sets foot 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, where 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 these lowly contemporaries. In simple prose, the great man tells the facts about the worm, quite unconscious of the picture that for others illuminates his book,—the greatest scientist of his century bowing his gray head for years in study of the humblest form of life. Because the worm is a nocturnal animal he must sometimes watch beside it through the night. While the world slumbers, the astronomer bends his telescope on starry galaxies, but he finds there no grander vistas than he whose scientific vigil is beside a pot of earthworms. What is an inanimate star to this dawn of organization, this genesis of order and first 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,—sensitiveness. 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,—so early was *that* fruit eaten! To seek pleasure and escape pain is henceforth the aspiration of animate nature: it will be the law alike of the self-tortured ascetic 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 dieth not. In Egypt the little lord of the grave expanded into Apophis, the all-devouring serpent, and it gave Dante and Milton their name "Worm" for Satan. The Rabbins brought together the Worm and Solomon (least and greatest) in their legend that, though that king, leaning on his staff after he was dead, deceived the genii, he could not deceive the worm. The enslaved genii went on building the temple, thinking their erect 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 me worm, I make you smoke.  
Though safe your nameless essence from my stroke,  
Yet do I gnaw no less  
Love in the heart, stars in the livid space,  
God jealous, making vacant thus your place,  
And steal your witnesses.

\* \* \* \* \*  
"Since the star flames, man would be wrong to teach  
That the grave's worm cannot such glory reach;  
Nought real is save me;  
Within the blue as 'neath the marble slab I lie,  
I bite at once the star within the sky,  
The apple on the tree."

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 became pantheistic; its eye caught the glimpse of a cosmic unity which included the worm and the universe in one vast circle of love. The first lines of a new worm-epic were written by Shelley:—

"The spirit of the worm within the sod  
In love and worship blends itself with God."

The brave theme floated in the air till it caught the ear of Robert Browning, and there gained a variation:—

"For the loving worm within its sod  
Were diviner than a loveless God  
Amid his worlds, I will dare to say."

But before that Emerson had measured the justice of the universe with this lowly form:—

"Fear not then, thou child infirm,  
There's no god dare wrong a worm."

Thus there have been fine preludes to the new epic, whose materials Darwin has gathered and sifted; and this new song will reveal the worm as reverse of a destroyer. It harms not the living. It burrows in graves to bring back into activities of life the useful substances which man, or rather his superstition, buries there. The worm is the resurrection and the life for such spirits in prison. Things hard and useless for the life of nature,—stones, ruins,—it buries, but converts organic remains into mould, and brings them to earth's surface, where they may bloom again and breathe in fragrance and happy carols.

The worm is apparently the first form in nature that ever earned its living by work, and, like every faithful worker, serves all in serving itself. It is weak and timid; without eyes, ears, feet, tooth, or weapon of defence; it can only lay hold of a thing by suction. 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 violent 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 hurling anathemas upon the man to whom it now repairs to beg a little help. An ingenious writer in the *Spectator* argues that the work of the worms 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 sand, chalk, etc., to get the small nutriment in them, when it might get the food it prefers by devoting 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 bound to such self-denying work by a higher power. But the theologian forgets that what is originally adopted from necessity often survives as instinct. There are human tribes that obstinately 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 earthworm could have varied its 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 prudence of one animal, the affection of another, the maternal instinct of another, it has worked. Human taste



natural history. Here is a vast mass of facts brought together as a first instalment of *pièces justificatives* 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 exhaustive. The amount of facts which he has brought together is perfectly marvellous; and many of them—all, for instance, that he says about the horse and the dog, and their variations—are full of interest for the general reader. Whether or not we accept Dr. Darwin's theory, it is interesting to learn that bulldogs, which, when first taken to India, will fix an elephant to the ground by its trunk, in two or three generations not only fall off in pluck and ferocity, but lose the underlung character of their lower jaws. Setters, too, deteriorate even more rapidly in hot climates. Our bulldogs, by the way, are greatly reduced in size owing to the discontinuance of bull-baiting. Pointers, again, came from Spain; but a few centuries have so modified them that there is no breed now in Spain corresponding in figure with our pointers. Horses vary sooner even than dogs. In mountain ranges and islands they always get small. In the islands off Virginia they have shrunk away (certainly not owing to the cold) almost to the size of Shelties. In the Falkland Isles, again, they soon become too weak to be used with the lasso for catching wild cattle; for which purpose horses have to be imported from La Plata. Damp hurts them so much that all over the vast humid area from Calcutta up to mid China no full-sized horse is found. The woolly horse of Barnum, by the way, is not a unique animal; were not tailless horses and woolly horses and other "variations" culled out, there would be breeds presenting these uncomely peculiarities. These are samples of Dr. Darwin's facts—very interesting, we repeat it, for 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 Pangenesis—"a hypothesis resting on the assumption that all organic units, besides having the power of growing by self-division, throw off free and minute atoms of their contents, i.e., gemmules." This hypothesis shows such facts as variability, inheritance, reversion, or atavism, &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 notation is in mathematics. To deal fitly with chapters like this is impossible within reasonable limits of space. Every one knows that Dr. Darwin, when he writes for the philosophers is sure to win their attention. We have said enough about the more popular part of his book to show that it gives him a claim on the general, even on the wholly unscientific, reader.

#### GOD IN HISTORY.\*

THIS great work comes to us with a threefold recommendation. It is, we consider, the most masterly, if not the most matured, achievement of Baron Bunsen's genius. It is rendered into good and graceful English by the accomplished translator of *Tauler's Sermons*, 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 translations from the classical poets are from the elegant pen of Professor Conington. 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 true key-note 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. Whilst others talked of their admiration 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 experience. This is one side of the book here translated. But not the less clearly does it bring out his equally strong conviction,

—the passing away of the glory of the world under the remorseless gnawing of time. But in our century poetry became pantheistic; its eye caught the glimpse of a cosmic unity which included the worm and the universe in one vast circle of love. The first lines of a new worm-epic were written by Shelley:—

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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 prudence of one animal, the affection of another, the maternal instinct of another, it has worked. Human taste

\* *God in History; or, the Progress of Man's Faith in the Moral Order of the World.* By C. C. J. Baron Bunsen. London: Longmans. 1868.



is prefigured in the distinguishing touch of the worm; and human society in the earthworms rolling themselves together in a ball to keep alive through the winter. That, too, is providence. But when the human mind would go beyond recognition of its own tendencies distributed through nature to find these concentrated in an Omnipotent Person, the providence that seemed so beautiful in the earthworm ceases to be so. We should expect the culture of the soil to be achieved by Omnipotence without such myriads of agonies. The needless agony of one worm justifies Emerson's verdict, "There's no god dare wrong a worm,"—the penalty being that a power which achieves by pain what it might achieve without, it must cease to be worshipped when it ceases to be feared. Tennyson trusts

"That not a worm is cloven in vain,  
That not a moth with vain desire  
Is shrivelled in a fruitless fire,  
Or but subserves another's gain."

That is a divine voice, filled with a pity that nature largely lacks, and though it may sink into agnostic silence it can never be lifted in loving praise of a power less compassionate than itself. Therefore it is that every religion is a pilgrimage from a cowering worship of omnipotence to the apotheosis of its victims,—from Brahma to Vishnu, from Zeus to Prometheus, from Jehovah to Jesus. And all these do but dramatize love. It may be that in the great future of human development some vision may be attained of a divine life in nature as little dreamed of now even by a Darwin as the worm writhing in his hand dreams of his true heart. The reverent mind can afford to wait without dogmatic negations, but it cannot say it sees the things it sees not, nor sing hymns which belie its humanity. Its religion is the love of Love, an uncomplaining calm resistance to all that is opposed to love, and a joy in all those adaptations in nature which illustrate the steady transmutation of inorganic nature (including the disorganizing ferocities and passions in which it survives) into the image of that divine principle which links the toiling worms with the suffering saviours of the world.

Darwin shows how earthworms have preserved ancient ruins, old monuments, the records of man's earliest history and the materials of science. I was lately walking with some scientific men in a beautiful region of Wiltshire. Near us workmen were excavating an ancient barrow, bringing from it the ashes and arrows of prehistoric warriors. Near us a greensward, spread by earthworms over a British village, awaited its turn to withdraw for the inspection of science. Among the company was Sir John Lubbock who has so long vainly tried to persuade legislators in Parliament to give ancient monuments a protection now chiefly accorded by the worms. These relics are in the region of the famous "Cranbourne Chase." The hunting seat of King John is there, and many ancient hunting lodges. There were once twenty thousand deer in this Chase, and for centuries the first gentlemen of England, always an incurious race, did nothing but hunt there. Not a tumulus was uncovered, not a monument exhumed: over historic spots, Roman camps, British villages, they hunted and they hunted. All the "providential" care of the worms was wasted on them from remote antiquity up to last year when all that land became the inheritance of the President of the Anthropological Society. Then the work of the worm was realized. The monuments they have preserved are now coming forth, and the little creature is at last linked with the advanced thought of the world.

Solomon sent man to school to the ant that he might learn enterprise. He might equally have

bade man learn from the worm that gnawed his staff the greatness of the least when its work is organic. In its sod it works, an earthworm, unambitious to be a heaven-worm. Perfect steadfastness to what it is organized to do enables this weakest of its citizens to change the face of the earth. If men and women only spake and did what is equally organic, out of their very structure! What then would become of all this that people call their "religion"? What are these dogmas, rites, ceremonies, in Europe and America? Do they come out of the heart and brain of the living man? Are they expressions of the sentiment, common-sense, and reason of our age? Assuredly they are the relics of dead brains, Egyptian, Syrian, and other. Earthworms have long ago converted the cerebral organs that so thought, the lips and hands that so spake or wrote, into mould, and so passed them on to new organization for new work. But they cannot claim to be even fellow-worms of those faithful organisms who, finding their dead dogmas and rites transmute them not at all, but parade those spiritual scalps as ornaments and charms, even amid the electric lights of their physical civilization.

There is, indeed, one aspect in which the earthworm is but a too faithful type of the superstitions which arrest the organic work of the human brain and heart. And here again we may remember pregnant words of the thinker who, least of all in his generation, suffered such arrest:—

"A subtle chain of countless rings  
The next unto the farthest brings.  
And, striving to be man, the worm  
Mounts through all the spires of form."

These lines of Emerson, anticipating Darwin's great generalization, suggest the sad side of evolution. The worm mounting through the spires of form may continue through them instincts which, however useful in a worm, are deplorable in a man. (Alas, that fact was known to Pilpay and Æsop, who detected the slyness of one animal and vanity of another beneath the mask of man!) The worm is a fair type of that adherence to old conditions by sheer force of custom, which is the chief obstruction to human development. Though the conditions of nature have changed again and again, the worm goes on burrowing and eating the dust all its days. So did its ancestors. And what other reason have half mankind for what they say and do? Why are antiquated prayers and creeds repeated? Why are foolish oaths found crawling about court-room and legislature? Not because they are really believed: were they really believed, toleration of their denial would be impossible; every freethinker would be executed as a destroyer of more than life and property. It is the worm-instinct, burrowing in graves, though a new heaven and earth offer it their banquet.

It must be admitted that this persistence of usages based on discredited beliefs serves a like utility with that of the worms, which preserve monuments. The science of mythology and folklore values the myths and fables transmitted by the credulity of one generation to the parrot tongue of the next. But it is too costly a price to pay for the fables that their transmission makes man a mere leaden pipe. At any rate, we need such antiquated mythoducts no more. Art and science can secure all the survivals they require without their being deposited in the place of brains. It is time for that dogma to die which makes man a child of the worm, and his religion a prolonged meditation in the grave. It is time for man to enter on his progression also, and mount through all the spires of thought, building his spirit's mansion not beneath the earth, but upon it.



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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 sense, were rather her lords and masters than her fellow-worms: human interests were sacrificed to them. The poet Cooper wrote:—

"I would a caterpillar on my bed of bladders,  
Thy eggs gnawed with polished manners on! I see none,  
The more the nobility and 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, where ignorance says falsely, "They are our fellow-worms," knowledge may say the same truly, at any rate of the earthworm, now that Darwin has told us the history and romance of these lowly contemporaries. In simple prose, the great man tells the facts about the worm, quite unromantic of the plotter that for others illuminates his book, —the greatest scientist of his century having his gray head for years in study of the humblest form of life. Because the worm is a nocturnal animal, he must sometimes watch beside it through the night. While the world slumbers, the astronomer leads his telescope on stony pillars, but he finds there no grander vision than he whose scientific right it be to look a peep at earthworms. What is an insect-made star in this drama of organization, this process of color and form, laid out 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 the gnat, 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,—a truly 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-tortured ascetic and the epicurean. All divination 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 died not. In Egypt the little head of the gnat was painted into a peltis, the all-devouring serpent, and it gave Dante and Milton their name "Worm" for Satan. The Egyptians 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 enslaved psalm went on beliding the temple, thinking their most master was still alive; but the worm gnawed the end of his staff, and down tumbled Solomon. Christians represented Eve as having turned to worms. Many myths of this kind preceded Victor Hugo's "Epic of the Worm," which Bayard Taylor translated:—

"And having made me worms, I make you monks.  
Though not your monastic comes from my stinks,  
Yet do I give you less."

Low in the light, man in the dark space,  
And justice, flowing round his poor place,  
And stand poor widows."

"Hear ye what Satan, man would be wrong to teach  
That the graven worms cannot seek glory's reach,  
Laughed and is now true."

Within the lines we "teach the marble that I lie,  
I live as now the star within the sky,  
The light on the tree."

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 pathos; the eye sought the glimpses of a minute entity which included the worm and the universe in one vast circle of love. The first lines of a new poem were written by Shelley:—

"The spirit of the worm within the soil  
Is love and worship think that work soil."

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

"For the living worm within the soil  
Was stouter than a woman that  
And the worm, I + 20 dare to say."

But before that Emerson had measured the pulse of the universe with this lovely form:—

"There are stars, there still better,  
There's no god that wrongs a worm."

Thus there have been five positions in the new epic, where materials Darwin has gathered and sifted; and this new song will reveal the worm in terms of a destroyer. It knows not the living. It knows in prose to bring back into existence of life the mental substance which man, so often his repetition, borrows there. The worm is the resurrection and the life for such spirits in prison. Things hard and unseen for the life of man,—stones, ruins,—is broken, but worms create organic remains into mould, and brings them to earth's surface, where they may bloom again and breathe in fragrance and happy words.

The worm is apparently the first form in nature that ever earned its living by work, and, like every faithful worker, never all in serving itself. It is weak and sturdy, without arms, legs, feet, teeth, or weapons of defence. It can only lay hold of a thing by crawling. And this slow, pushing, 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 mathematics upon the man in whom it now repairs to beg a little help. An ingenious writer in the *Spectator* argues that the work of the worm must have been providentially designed, in satisfaction of man, because the worm does not do the best for itself while doing the best for man. Such is the fact. The worm creates vast quantities of mud, chalk, etc., to get the small settlement in them, when it might get the food it prefers by dwelling itself in the vegetal world. It has gone on for ages making dust, though the vegetal supplies have increased. It must, says the theologian, have been bound to such self-deceiving 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 shell, rarely go naked, even in the cold, after clothes are offered them; others that keep the Sabbath rigidly after it has become an impotency. 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 earthworm could have varied its 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 love



that a breed might be formed of indeterminate fertility, with laws fitted to give down the bull by man's brutal spirit?

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

Professor Don Quixote wishes to believe that "variation has been led along certain beneficial lines like a stream along ridges and useful lines of obligation." He says Dr. Darwin, in this view the plasticity of organization which leads to many injurious deviations of structure, and the redundant power of reproduction which causes the struggle for existence, would be spontaneous laws of nature; whereas, an omnipotent and omniscient Creator must have ordered and governed everything. There the difficulty remains, as insoluble (Dr. Darwin would say) 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 marvellous to any but a Darwinian. He attempts to prove too much; as he himself confesses, "to consider the subject under this point of view"—"its original identity of wholeness, truth, firmness"—"is enough to swallow us down with amazement." So it is, indeed; but will more readily lead to reflect on what infinite facts we want a hypothesis to guard. Dr. Darwin is very modest; he only puts it forward as a hypothesis; and he produces no few 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 cannot believe that because these abstract 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 assumption 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 polygenists at once see the weak point here, and say, in M. Peuchet's words, that "variation under domestication throws no light on the natural modification of species." This formal objection is, we all know, that while a cross shows the most widely-rendered variation is invariably sterile, a cross between the most closely allied species is always sterile. This was the old argument of Lord and Giddens against the negro'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. Quatrefoyer and other monogenists 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 variation gives a fertile step, and let Fallax say he is right in asserting that species, after having been long domesticated, has their natural tendency to sterility less crossed. 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 variation all faced the same; now, however, it has been proved that immunity from certain poisons exists 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 are about us are permanent varieties, brought about by natural selection, shedding off the beneficial variations of the individual, and throwing off any variations which are fixed 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 positive justification for the Drift 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 noteworthy, 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 dog, 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 be as displaced in the ground by its track, in two or three generations not only tell off in pluck and tenacity, but have the underlying character of their lower jaws. Bones, too, deteriorate more rapidly in hot climates. Our findings, by the way, are greatly reduced in size owing to the discontinuance of habituating. Pelicans, 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 picture. Ravens vary some with their dogs. In mountain ranges and islands they always get small. In the islands off Virginia they have almost every variety not owing to the soil) almost to the size of sparrows. In the Falkland Isles, again, they were known to work to be used with the hares for catching wild cattle; or pink pig-pens-hares have to be imported from La Plata. Every fact shows so much that all over the vast island area from Calcutta up to cold China no full-sized horse is found. The really horse of Burmah, by the way, is not a native animal; even our Indian horses and mostly horses and also "varieties" bred out, from would be breeds possessing characteristics. These are samples of Dr. Darwin's facts—they are not, we repeat it, for 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 self-driving, throw off free and almost sense of their existence, i.e., "parasites." This hypothesis shows such facts as variability, divergence, reversion, or sterility, &c.; and in his latest 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 in mathematics. To deal fully with chapters like this is too wide within reasonable limits of space. Every one knows that Dr. Darwin, when he writes for the philosophers is sure to win their attention. We have said enough about the more popular part of his book to show that it gives them claims on the general, that is the wholly unscientific, 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 his 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 Introduction from the classical poets are from the elegant pen of Professor Conington. 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 true key-note 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. Whilst others talked of their admiration 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 experience. This is one side of the book here introduced. But not less clearly does it bring out his equally strong conviction,

\* *God in History: or, the Progress of Man's Faith in the Moral Order of the World.* By G. C. F. Baron Bunsen. London: Longmans, 1880.