

opponents. When we defend our Establishment on the ground of its political or social utility, we are likely taken to task for taking such low considerations on the attention of a great people. We are told that the honour of England requires that at all costs "right be done." When, however, we argue what seems to us the justice of our claims or our endowments, we are told that, just as unjust, right or wrong, we are politically and socially mischievous, and must be got rid of. We are quite willing to argue each of these questions separately. Our Establishment, Mr. A. says, is an injustice; such and such is our advantage, Mr. B. Our Establishment, Mr. B. says, is a social and political failure or mischief; such and such is our answer to Mr. B. But it is a little too much when A. objects to our reply to B that it takes no notice of his argument, and B objects to our reply to A that it takes no notice of his.—I am, &c., &c., W. C. MACHIN.

## BOOKS.

### MR. DARWIN'S LAST WORK.\*

WHATEVER view we may take of what is now commonly called Darwinism, there is one aspect of it under which the thanks of all persons are especially due to its author. Mr. Darwin has brought to the knowledge and adapted to the comprehension of a large portion of his fellow-men and women, formerly quite strangers to the common facts of natural history, a countless number of ideas which had been hitherto regarded as the peculiar property of naturalists, and as being matters of no account to any one else. When the *Origin of Species* was first published, we remember meeting in his train a friend, a lawyer, even then of some reputation in his profession, and a man of more than common intelligence. "What a strange title for a book!" he remarked, as he read it on the back of the volume we held on the opposite seat; "what does it mean?" We found that the only "species" of which he had a notion was the human species, and that not the slightest conception that the words "race," "genus," "class," and so forth, were definite terms, to which certain abstract ideas were attached, had ever entered his mind. A few months afterwards the phrases "struggle for existence" and "natural selection" were in the mouths even of young ladies at the dinner-table—and, thanks to the lucidity of Mr. Darwin's style, they were very generally and thoroughly "understood of the people," with the exception of a certain number of those persons who, from their very nature or studies, should have especially comprehended them. Since then we are certainly not exceeding the mark when we assert that a large majority both of the general public and, in this country, of scientific naturalists have given to their attention, more or less, to Darwinian petasels.

We say more or less—because, as years have passed on, there has sprung up a not inconsiderable number of scientific men who declare that they have been Darwinians all their lives—that they were Darwinians, to a certain degree, before Darwinism was invented, and that there is nothing new in the petasels its founder presupposed. It is very remarkable that of such men there is scarcely one who has thoroughly bottomed the theory—scarcely one who has effectually comprehended its nature. They may write about the "obtained continuous becoming of organic forms," or admit that species are not the result of separate and particular miracles in their origin; but by what means this "continuous becoming" takes place, or whether it follows any rule at all, they cannot divine. If their hesitation arose from the cautious reticence which every scientific man ought to feel before announcing himself to the acceptance of a new theory, nothing could be said against it. It would be most proper and most commendable. Unfortunately there is reason to suspect that it springs from no such sentiment. It would rather seem due to the consideration, "The doctrine of natural selection was not invented by me. I must admit the facts on which it is grounded, but the undesirable logical results I will not recognize." This, we fear, has been the motive of one class of hostile critics. There is another class—free, indeed, from any such degrading motive of jealousy; but from a scientific point of view hardly to be more highly esteemed. This class consists of the objectors who have never clearly understood (though of course they thought they did) what Mr. Darwin's great theory was, and are naturally unable to perceive its peculiar merits. They cannot see that it differs from the grossness of Lamarck or the dream of the author of the *Frœgler of Creation*. The more intellectual of the first class possibly pass themselves off as belonging

to the second. Anyhow, it appears to us that though there may be many followers of Mr. Darwin who fail to comprehend the theory he has rendered so celebrated, some of those who have publicly denounced it have succeeded in showing that they have thoroughly mastered its details.

When the *Origin of Species* appeared, its author undertook to publish, with all convenient speed, the collected facts on which he based his reasoning. Accordingly, we were shortly presented with a little work on the *Variation of Animals*, and another on the *Movements and Habits of Climbing Plants*, each of which covered a small portion of the whole subject. Now we have before us the *Variation of Animals and Plants under Domestication*, the first of a promised trilogy; in the two volumes of which we are to be led to consider the variability of organic beings in a state of nature, and the validity of the principle of Natural Selection to account for the difficulties in the way of adapting it, of the presence of which difficulties in one some more conscious than Mr. Darwin himself. The bearing on the general question of the work now under review may be illustrated by comparing it to the common proof of a well-known mathematical theorem. Certain properties may be proved for certain limited numbers in succession. If any indefinite number be taken, the same property may be proved to exist for the number next to it. Hence mathematicians conclude that the theorem is universally true. Mr. Darwin's conviction that he is able to prove (and to us it appears that he is right) his theory to be true in the case of the small variations of certain species. He then takes a species as much at random as he can, and finds that his theory will hold good to account for the slight variations of that particular species. He consequently infers that it is true for all species. But there is this difference between our illustration and his present example. The latter are somewhat restricted in number, and are under conditions not natural to them. Of course his opponents make the best use they can of this fact. Consequently, Mr. Darwin is led to consider at some length what may be the real cause of variability, the direct and definite action of the external conditions of life upon plants and animals, and to attempt the discovery of the laws by which variation may be governed. That variability is owing to certain causes, no one, we think, can doubt. Whether any of those causes are already known to us, or will become so, is another matter. Whatever they may be, it is an extremely unlikely that there is one set of them acting on species in their natural state, and another set acting on the same species when domesticated. And this, it appears to us, is the key to the whole position. Mr. Darwin is trying to occupy, the importance of which, in his treatment of it, is not made sufficiently manifest. Once prove that the causes of variability in domesticated and wild species are of the same nature, and the class of objections of whom we are now speaking is answered. But the difficulty of proving this point, though its probability be of the highest, seems to remain. Notwithstanding the enormous array of facts assumed by Mr. Darwin, we cannot look on the point as established. Its likelihood is only increased, though increased immeasurably.

Mr. Darwin brings to his old new ally. He has thought out a "provisional hypothesis of Pangenesis" —

"It is almost universally admitted that cells, or the units of the body, propagate themselves by self-division or multiplication, retaining the same nature, and ultimately becoming separated into the various tissues and substances of the body. But besides this mode of increase I assume that cells, before their accession into completely formed or 'formed' material, derive their constitution not completely from the freely developed system, and what supplied with proper nutriment multiply by self-division, subsequently through their union with the cells from which they were derived. These granules for the cells of distinction may be called self-generated, or, if the cellular theory is not fully established, simply generative. They are supposed to be transmitted from the parents in the offspring, and are generally developed in the generation which immediately succeeds, but are also transmitted in a dormant state during many generations and are then developed. Their development is supposed to depend on their union with other partially developed cells or generative which precede them in the regular course of growth. Why I use the term union, will be seen when we discuss the direct action of pollen on the tissues of the mother plant. Generatives are supposed to be derived off by every cell or unit, not only during the adult state, but during all the stages of development. Lastly, I assume that the generative in their dormant state have a natural affinity for each other, leading to their aggregation either into buds or into the sexual elements. Hence, speaking strictly, it is not the reproductive elements, nor the buds, which generate new organisms, but the cells themselves through their union. These assumptions constitute the provisional hypothesis which I have called Pangenesis." (Vol. II, p. 271.)

This hypothesis, as Mr. Darwin shows, is not exactly new. Huxley, Bennett, Professor Owen, and especially Mr. Huxley's sponsor, have uttered opinions in a manner approaching it. But Mr. Darwin goes beyond these all. He has put forth as hypothesis

\* The *Variation of Animals and Plants under Domestication*. By Charles Darwin, M.A., F.R.S., &c. 2 Vols. London: Smith, 1881.

which it will take physiologists some time to digest, and when they have digested it, some time must elapse before they can declare it to be wisdom or the contrary. At present we cannot but regard it with suspicion. It seems like an unwieldy weapon of very doubtful utility under the circumstances, just as likely to bring defeat on its employer as victory, like a huge cannon dragged in the train of a herbaceous potentilla, clogging his movements, and hindering him from a rapid advance whereby he might pierce his end. The historian of the Crimean War tells us that our loss had the battle of the Alma, which they had all but won, through fear of risking a single piece of artillery. It seems to us that in employing his energies to pursue this new, or quasi-new, hypothesis with which he has unconsciously encumbered himself, Mr. Darwin places his beautiful and all but proved theory of Natural Selection in great jeopardy. If the new hypothesis be overturned, what becomes of the other theory to support which it was brought into the field?

Leaving, then, this part of the work to the criticism of the future, we will return to the earlier portions, in which the author arrays, as heating on his subject, facts and opinions innumerable, with a patience truly German in the application, and with a practical consequence that would drive an average German to despair. There may be inquirers who have laboured more strenuously and have therefore obtained greater knowledge of the matter treated; but we doubt if there is another man in the world who could exhibit in so small a space and in a manner so orderly the results of researches, at once experimental and literary, carried on to an extent so truly marvellous. The old familiar illustrations of the shepherd's flock or the Mosaic hammer come immediately to one's mind. Mr. Darwin descends on a poultry book, and out rolls a ripe kernel of fact, *Alibuteo hiberna* is a shell, where it had been of no other use than to feed a maggot. Again, he comes down on a rough man of metal, his Father's doctrine of the origin of domestic races, and after a space or two there lies before us a goodly hooping, truly wrought and fit to serve as a pillar or beam in the edifice he is constructing. He will pick up a pin from the *Eclogæ Calender*, or brandish a battle-axe in the face of a transcendental scientist. It is, above all, curious to mark the way in which he has identified himself with the fancies of plants and animals. He falls into their slang phrases, and seems almost unwilling or unable to escape from their profligate. Such and such a strain "broods true," is one of his constant expressions, though his language is in general a model of correctness, and the fact of different strains breeding as "was" appears to jamper him, to make him hesitate, and almost to hinder him from tracing his own theory. Thus and again he has to gird himself to the effect of overthrowing the common expression of breeders that our pigeons or our poultry have descended from no one knows how many distinct species, and it is only by continually redefining himself, as with a corded, by referring to the recent establishment of certain new races (such as the "Himalayas" rabbit, the *Ardea alpestris*, or the *Musca sativa*), the history of whose production is perfectly well known, that he finds himself equal to his task.

The variability of species under domestication is abundantly proved—after one of the volumes (vol. 1., p. 235) we shall never again be able to use the proverb "as like as two peas." It remains for Mr. Darwin to show the variability of species in a state of nature. This, we apprehend, will not be a very difficult task; but, as we have above indicated, he seems to us not to have proved that the cause of variability is the same in both cases, for the "prevailing hypothesis of Progress" runs on far too many assumptions to be accepted as proved, and until the case in such case is shown to be identical, one strain of Mr. Darwin's objections will not be refuted. The class of his arguments which consists of signs, or persons jealous of his discovery of the theory of Natural Selection, may be safely left to become silent, as it will surely cease with the lives of those who come under the category.

#### MEO.

"She was not yet seventeen, and beautiful with a beauty rarely seen in such places as Swamp Town. It was a face that would have been a fortune to a vulgar actress—mobile, expressive, and finely formed, almost a perfect oval, with a finely moulded chin, and a broad, open forehead; a forehead that a physiologist would have delighted in, as an artist would in the large, dark wild eyes, the arched eyebrows, the rich red lips, the clear dark skin, with the peach-like bloom upon the cheeks, and the wealth of dark hair that now fell around her in disorder. A face that might

have smiled either a martyr or a martyrdom, the face of one capable both of strong endurance and of passion, of being recklessly and hating really, of self-sacrifice even unto death, of resentment, or of gratitude that even death itself could not efface. But it was the last face that one would have thought Swamp Town could have produced." Mag, the girl then described—and the description of her face is also the description of her character—is a counter-temperament's mistress, and the heroine of this book. The dignitate daughter of a gentleman and a vulgar woman who drinks hard, bore, or at least cared, in Swamp Town, where marriage is an unknown commodity, she has, with all her fine natural qualities, as little notion of religion or morality, either real or conventional, as a savage. All that she knows or cares is that she passionately loves Joe the counter-temper, and that when he dies at sixteen of over-work and exposure, the light seems to go out of the world for her. The very next month work, however, whether the light is gone out or not; and Mag will violate in the streets all she is picked up by a Mrs. Mayo, a lady sculptor,—strong-minded, hard-headed, and haughty, but slightly coarse person,—who wants a model for a class of girls, and thinks Mag is her patched garment's picture. The life in the studio among the girls there studying art wakes up her thirst for knowledge; she touches herself to read and write, saves money by sitting as model to Mr. Kendall, an amateur artist, who is attracted by the Oriental character of her beauty, and finally, without liking him, accepts a position as his mistress. She does not at first feel that it is a degrading one; in Swamp Town they know little of degradation, and she was still a savage. The process of education, however, went on rapidly; Mag read everything she could lay her hands on, and the remarks of the neighbours upon her mind to the reality of her situation; a child she attempts to kiss is snatched from her; a few shrews she sends to an acquaintance made in the studio are contemptuously sent back to her; she perceives the contrast between herself and the model for which she had originally sat, Scott's *Editha*, "and then there was the wretched letter that she had never known what purity and honour were, till they had gone from her for ever; that her garments might have been as pure, her soul as free from soil and stain as the purest woman she had read of, had she only known it then. She wrung her hands, and looked appealingly at the picture before her. It was late noon after all, though it bore her likeness, and with the tears streaming from her eyes, she murmured, as if to ask for pity: 'I never knew!—is all my life till now I never knew?' Then she hid her face in her hands, and added aloud." She opens Kendall to live as a law-worker, and while thus employed learns that her mother's relation to her father had been a legal one; that she is an heiress, and that her appearance will raise her half-sister, a very little body of so particular character, but a fine mind, who has retained a passion of gratitude in the emotional and awakened Mag by once kissing and caressing her. She decides in an instant that this shall not be, writes a farewell letter to her sister, and half mad with gratitude, shame, and loneliness, drowns herself. We should add that Mr. Kendall, the amateur artist, finding that she is an heiress, offers to marry her, and is rejected with scorn, on the distinct ground that it would with her new knowledge degrade her to marry a man whom she had never liked.

There is a sub-plot running through the book, and Mrs. Mayo supplies some admirable painting in the shape of classical and semi-classical sketches, sketches of nature, scenes, churchwardens, their wives, their families, and their jangle; but the central figure—the one by which the book must be judged—is Mag herself, and Mag is, on the whole, a failure. The author seems to have conceived her thoroughly, but to lack the power to make her completely fully visible to her readers. In part, this obscurity, or rather indistinctness of drawing, results from the difficulty of treating the subject at all in a popular novel, except in a way too vague to leave an impression of reality. The help-gone to Mag's character, as a savage under development, is her view of her own relation to Joe and to Mr. Kendall, her impression, that is, of the relation of the sexes to each other; and into this Mrs. Mayo could not thoroughly enter, could not clearly define what she means by an ignorance which is in no way innocent. But part also arises from deficiency of power. George Eliot or Curran Hall might have depicted an ignorant or even vicious soul gradually struggling up to the light, which has been hidden from it by the cloud which extreme ignorance seems sometimes to cast over the mind; could have analysed that strange relation between soul and brain which seems sometimes so slight, and sometimes so complete, under which more knowledge will occasionally develop latent virtues—read Major Harvey's *Thangoo reports parva*, or say

\* Mag. By Mrs. Mayo. London: Burns and Blackie.