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CHARLES DARWIN.

BY the death of Charles Darwin, which occurred on Wednesday, England has lost the most original, as well as far the most celebrated, of modern men of science,—the one man whom European Science would, with one voice, probably agree to consider as the most eminent scientific writer and thinker of the present century. No man of our century has changed so vitally the scientific beliefs of our day, and not the scientific beliefs only, but, whether rightly or wrongly,—we should ourselves say more wrongly than rightly,—those deeper beliefs which must always be more or less affected by the scientific hypotheses most closely connected with them. No scientific man of our century has covered so large a field of research, has surveyed it with so fair, so wide, so patient, as well as so acute an insight, has paid so careful an attention to all the objections to which his own theories are exposed, and exhibited so rare a candour in withdrawing anything in his conclusions which, on a subsequent investigation, he has discovered to be ill-founded. So far as the field of physical hypotheses to which he has chiefly limited himself is concerned, every one who knows Mr. Darwin's works will admit that he has not only been a most brilliant, original, and successful student of the secrets of Nature, but a most humble, cautious, and wise theoriser, one who knew as well when the materials of his speculations and generalisations were exhausted, as when they justified him in drawing an inference; one who was as prompt to deprecate the extension of his own inferences to the unexplored country lying beyond the limits of his observation, as he was to see the weakness of the objections by which his carefully-grounded generalisations were often met.

Mr. Darwin was not only the most brilliant, but the most moderate and judicious of all the great naturalists of his day. Of none other could it be so truly said that a pure love of truth,—truth as man can alone grasp it, with all its mortifying limits and abrupt chasms,—truth even when it is not neatly rounded off truth irregular and clumsy, and with those great hiatuses which, sprinkled, as they are, over the map of it, are almost exasperating to the imaginative man,—completely ruled his mind.

The minute care with which he collected facts, whether they suited his own hypothesis or not, the anxious patience with which he classified them, the large sagacity with which he often reconciled what looked like the most irreconcilable suggestions, were none of them, perhaps, so remarkable as the striking genius which Mr. Darwin betrayed in divining the direction in which he ought to look for the telling facts of the case; but though not so remarkable in an intellectual point of view, the strictness, and faithfulness, and perfect equanimity with which he welcomed what was unfavourable to his prepossessions as well as what was favourable, were the noblest characteristics of his scientific mind.

A man even of Mr. Darwin's genius whose eye had been less keen to see what did not suit him than what did, could never have done the half of what he did for science, or set so high an example of the fidelity and humility of human thought. It is characteristic enough of him that his latest book,—the book on Earth-worms,—probably never struck him even as in any way suggesting an anti-climax, after the great subjects which had previously occupied him,—the Origin of Species, and the Descent of Man. From the influence of rhetorical or artistic effect in speculative attempts to force the secrets of Nature, his mind was quite free. It would never have occurred to him that any one real extension of our knowledge of Nature was in any sense inferior to any other. Whatever really added to that knowledge, he prized in proportion to the addition made; and hence he may be said to have felt a sort of impartial sympathy with all the agencies of Nature, from the very lowest to the very highest, so far as his own methods of physical observation were equally applicable to them. We do not think that when he ventured into the region of psychology,—as he did in the book on the "Descent of Man,"—his usual methods of observation were equally applicable; and there, in our opinion, he went astray. But up to that point, the impartiality of his glance was fully as remarkable as its marvellous acumen and the unwearied diligence with which he accumulated the facts necessary to test his hypotheses.

Every one knows that Mr. Darwin's great discovery was the vast organic effect which is produced on every organisation in existence, by the constant pressure upon it of the conditions which tend to render its perpetuation and multiplication difficult,—whether these arise from the competition of organisms of the same kind for the elements needful to its food and growth, or from the aggression of organisms of a different kind which feed upon it, or merely from the parsimony of Nature in lending it sustenance. All these hostile conditions tend to lessen or extinguish a species, and thereby tend to give a very marked advantage to any variety of the species by which it is favourably distinguished. From the average specimens. If a variety of a particular plant, for instance, possesses some slight advantage over the main species in appropriating those elements in the soil which feed it best, it will flourish at the expense of its competitors, and will multiply more rapidly, while they either multiply more slowly, or even dwindle away. Or again, such a variety may be less attractive to the creatures which feed upon it than the ordinary type—and if so, it will gain a similar advantage over the ordinary species in any country in which the creatures which feed upon it are numerous and voracious; or again, a variety of such a plant may spring up which flourishes on less food, or less heat, or under less favourable circumstances of shelter, than the ordinary type —and if so, in this comparative unexactingness of its nature, it will gain an advantage over the ordinary kind which is of more luxurious nature and can only flourish under more complex and favourable conditions. This was Mr. Darwin's great principle. But his wonderful genius lay in his singular power to apply that principle to the discussion of the various modes in which variations of this kind affect the constitution of plants and animals, and mould them in the direction of least resistance to the various hostile conditions brought to bear upon them. Consider only the singular wealth and acuteness of that reading and

observation of which a paragraph like the following is, in precisely the same and no other sense, a specimen, as that in which a pebble from the beach is a specimen of the beach from which it was picked up: -

"Many of our orchidaceous plants absolutely require the visits of moths to remove their pollen-masses and thus to fertilise them. I have, also, reason to believe that humble-bees are indispensable to the fertilisation of the heartsease (*Viola tricolor*), for other bees do not visit this flower. From experiments which I have lately tried, I have found that the visits of bees are necessary for the fertilisation of some kinds of clover; but humble-bees alone visit the red clover (*Trifolium pratense*), as other bees cannot reach the nectar. Hence I have very little doubt, that if the whole genus of humble-bees became extinct or very rare in England, the heartsease and red clover would become very rare, or wholly disappear. The number of humble-bees in any district depends in a great degree on the number of field-mice, which destroy their combs and nests; and Mr. H. Newman, who has long attended to the habits of humble-bees, believes that more than two-thirds of them are thus destroyed all over England: Now, the number of mice is largely dependent, as every one knows, on the number of cats; and Mr. Newman says, 'Near villages and small towns I have found the nests of humble-bees more numerous than elsewhere, which I attribute to the number of cats that destroy the mice.' Hence it is quite credible that the presence of a feline animal in large numbers in a district might determine, through the intervention first of mice and then of bees, the frequency of certain flowers in that district!"

But the power of Darwin lay in the singular width of grasp, which enabled him to include in one survey all the evidence which could be gleaned in all the different departments of natural science, so as to demonstrate the steady effect of the pressure which Nature or Man brings to bear upon every species of plants and animals, in steadily altering organic forms so as to graduate the differences between one speck and another, till he accumulated the proof, not, indeed, that all existing species have sprung from either one or only a very few different types, but, at all events, that

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this is one of the most important, if not the most important, cause which has generated ultimate variety out of original resemblance; and that it is quite impossible, at present, to assign the limits to the amount of variation which this true cause may be found adequate to explain. The ingenuity of imagination and wealth of resource with which Mr. Darwin illustrated this principle, in his various great books, are quite beyond our power adequately to illustrate. Most of his books are, indeed, almost as striking to the untaught, general reader, as they are to the trained biologist himself. Mr. Darwin's style is so clear, and his natural history is so vivid, that any man can follow the links of his more remarkable chains of reasoning. Indeed, the second volume of his "Descent of Man" is far more interesting than most good novels. We read of that accomplished German bullfinch which attracted so much delighted attention from twenty linnets and canaries; of the zebra who would have nothing to

say to the ass till it was painted so as to resemble a zebra; of the silver pheasant which, directly his fine plumage was spoiled, had to yield the upper hand to a more dandified rival; of the carefully-decorated gardens of the Bower Birds; and of the gradual formation of the ball-and-socket plumage on the peacock's tail, with all the combined delight which is given by receiving at the same time fresh knowledge of the ways of animals, and fresh knowledge of the laws of physical development.

What Mr. Darwin does not seem to us to have treated with anything like the subtlety and depth with which he investigated the laws of organic change, is the psychology of human nature, though even here he had sagacity enough to put his finger on the right spot, though he failed to enter into the moral phenomena which he rightly held to contain the essence of the problem. He was so anxious to show that the moral life of man is but an evolution from the moral life of the lower animals, that he tried to explain that evolution in a false sense, as if the higher phase involves nothing that is not to be found in the lower phase. Thus he accumulated for us stories of courageous sympathetic actions on the part of the higher brutes, like that of the great baboon which ventured boldly among the dogs to rescue a little baboon whose life was endangered; and then tried to show that we could get an "ought" and "a conscience" out of mere victorious sympathy.

"The imperious word ought," he wrote, "seems merely to imply the consciousness of the existence of a persistent instinct, either innate or partly acquired."

But that is a mere leap in the dark. There can be no more persistent instinct than self-love, yet the imperious word "ought" is hardly ever suggested by the persistency of self-love, even when it comes into collision with much less persistent instincts,—say, for example, compassion. Mr. Darwin was quite right, when he put his finger on the collision of rival motives as the birth of ethical sentiment; but he was quite wrong in assigning the imperiousness of the word "ought" to the supposed greater persistency of the motive which gives birth to obligation. It is very often indeed much the least persistent motive which wields the talisman of ethical obligation.

But though we cannot see in Mr. Darwin a thinker nearly so great in the region of psychology as we do in the region of natural history, and though we regret the apparent deficiency in his mind on the side of the supernatural, we fully recognise the theistic character of his general view of the Universe. That Mr. Darwin had no place in his theory of the universe for a special Providence, or for individual relations between man and God, we are aware; but that he regarded the creative force as originally material, and not intellectual, we wholly deny. It seems to us plainly written in all his great works that, for him, the origin of Nature is in mind, and not the origin of mind in Nature. Thus far, at least, the great man we have lost had no sympathy with those amongst his own followers who would have it that the logic of Darwinism leads us far beyond Darwin, into a creative force that is as blind and ignorant itself, as it is fertile in mental surprises and wonderful geometrical or algebraic achievements. If Plato held that God is the great Geometer, Darwin certainly held that God is the great fountain of plastic art and biological method.