

division of the work, so important and splendid a painter as William Blake.

The photographs are well selected and well executed; indeed, the whole material production of the book is excellent.

*The Expression of the Emotions in Man and Animals.* By Charles Darwin, M.A., F.R.S., &c. London: John Murray. 1872.

IN our last issue we expressed a conviction that this is the most powerful and insidious of all the remarkable writings of our gifted author. The reason for this lies not in the subtlety of its speculation, nor the fascination of its facts, for in both of these respects *The Descent of Man* and *The Origin of Species* surpass it in the bold and unhesitating manner in which it makes the doctrine of natural selection a necessary truth. We—and we believe theologians generally—have no objection, abstractedly, to Mr. Darwin's speculations, provided that it be remembered that they are speculations and nothing more. But when they are taken for granted as great laws of Nature,—when the *modus operandi* of the physical expression of man's mental emotions is explained to us on the assumption that natural selection *must* be true, we object. Let it be remembered that, during the whole period that has elapsed since the publication of this ingenious speculation, not a single fact in indubitable support of it has been found. It has created a new epoch for Biology, and has roused hundreds of students from torpor into intense aspiration and activity. From the minutest to the broadest fields, the most enthusiastic research is being prosecuted, and again and again we hear of "facts" for Darwin which, on careful scrutiny, it is found may fall into harmony with his hypothesis or with some other. But as to the great principles on which the doctrine rests, not a single shred of evidence is brought in their support. We know that under domestication almost all animals are subject to variation. But these variations are abnormal, they are produced and retained under strain. Take off that strain, and nature reasserts herself. The domesticated variety of the wild form returns to its primitive state. So that *natural* selection is unknown; not an authentic instance can be given. While under the strain of domestication no single species has ever been produced. *Species* produce infertile hybrids; but the progeny of domesticated *varieties* are prolific. Yet without, as Mr. Darwin admits, a single instance of specific transformation in nature—without a single transformation-link between the enormous gulf that separates the highest ape from the lowest man, he ventures to substantiate "natural selection" by taking it for granted that the modes in which man expresses his emotions can be explained by it alone!

What it is that is *subject* to emotion is not hinted at; nor have we the slightest reason to conclude that it is anything other than brain and nerve. The mind *per se* as an agent is ignored. The question is purely a physical one. That matter may be affected by mind, and

that opposite states of mind might produce opposite conditions of the nerve and muscle on which it acts, and so cause emotion to find expression, Mr. Darwin stays not to consider. Nor does he remember that a comparative similarity of object must involve a comparative similarity of instrument. Terror, joy, rage, impotence, are emotions that must more or less definitely exist in all the higher brutes: so must organs of respiration. So far as they share these conditions with man, there must be a similitude in the instruments. The same end has to be accomplished, and there must be more or less precisely the same means; but does it therefore follow that the one was developed from the other? This is what this book takes for granted; nay, insists on; and we do not hesitate to declare this adverse to every dictate of a sound philosophy.

Mr. Darwin has undoubtedly thrown light on many of the more remarkable expressions common to man and animals, and laid bare, with much clearness, the mechanism by which such expression is effected. But when, instead of attributing the origin of their action to mind, he assumes that their activity, displayed in this or that way, is the mere residue of the habit of some brutal ancestor who flourished in the indefinite past, he simply shows himself as the special pleader for evolution in his own darling method, and not the man of science seeking truth.

Three principles are laid down as competent to account for most of the expressions used involuntarily by man and the lower animals under the influence of emotion. The first is that of serviceable associated habits, which, put concisely, means that when any action or set of actions has been found useful or necessary under a certain state of mind, whenever the same state of mind is produced there is a tendency, from the force of habit and association, to repeat those movements although they are (now) of no service. Thus cats dislike wetting their feet, and shake them with a brisk vibratory movement when they are wet. Mr. Darwin observed that on pouring some water violently into a glass close to the head of a kitten, it shook its feet in the usual manner, from which it is inferred that the associated sound excited the habitual movement, even when there was no tactile impression. Or again,—occasionally dogs turn round several times before they lie down to sleep even on a floor or rug; a practice which, having been found useful to the wild ancestors of the dog, who slept among coarse grass and herbage, is by the law of associated habit continued still, although of no use. There is undoubtedly very much that is true in this general principle. The power of association is very great, and its unconscious results very many. But its universal application is simply preposterous. Mental states are forgotten. Associated habit, not mental feeling, incites to and accounts for the expression of our profoundest emotions. Nay more, the very animals from which by associated habit we have derived certain modes of unconscious expression are not even allowed to have had a desire to express, but simply arrived by accident at a suitable mode of doing

so. There is no more, according to this assumption, involved in the fact that an *animal* expresses a certain emotion in a distinct way than there is in the fact that its dentition is of a certain class. It is simply acquired because it is serviceable. When a polar bear expresses her affection for her whelp, there is no more in it than there is in the fact that she has white fur! But can this be true? Is there not an anterior *desire* to express? If not, how would expression in one animal be understood by another? What constitutes the difference between a dog's manner, when simply going to take food, and when receiving the caresses and attention of his master? In the first case, he is merely intent; in the second, a prodigality of antic and expression is seen. In both cases the existence of pleasure in the dog may be assumed: but why so different in their manifestation? Simply because the pleasure is merely *realised* in the one case, and there is *an intense desire to express it on the other*. Thus, then, even in the animal, in any and every form, and in any and every age, the *expression* of emotion must have been governed by the desire for its expression. We entertain no objection to this principle of associated habits in its own sphere. Thus Mr. Darwin explains the almost universal expression of affirmation by nodding, and of negation by shaking the head by means of this principle. He reminds us that with infants the first act of denial is performed by refusing food, which is constantly done by withdrawing the head on either side from that which is offered; while in accepting food their heads are inclined forwards. One inclination suffices; but there may be several lateral movements. From this the habit of inarticulately expressing affirmation and negation is inferred. This may be; as also the habit of animals who fight with their teeth, drawing their ears back in order to defend them, and who therefore keep them back when enraged, in contrast to those who, as the goat, never employing their teeth in conflict do not use this gesture. But when Mr. Darwin seeks to infer the expression of human emotion from the inherited habit of a brute, there is not a single fact adduced in confirmation, nor can there be. *Human* associated habit has engendered certain modes of emotional expression. So with the expression of the brute. But that there is any community between them Mr. Darwin has failed to afford a single proof.

With the accurate and careful illustrations that enrich this part of the subject, there are others that are, in the highest degree, unsound and unscientific. A catch is made at any physiological assertion, however ill authenticated, that will sustain, in appearance at least, the favourite theory of the author. In illustration of this, Mr. Darwin gives (p. 36) his sanction to a quotation from Dr. Maudsley, in which he affirms of a decapitated frog, which, of course, cannot feel, or perform consciously any movement, that if a drop of acid be placed on the lower surface of the thigh, it will rub off the drop with the upper surface of the foot of the same leg. If this foot be cut off it cannot thus act; and, eventually seeking some other way, it makes use of the foot of the other leg, and so rubs it off! We declare this

to be a simple fable. We venture to say, that not a single English physiologist has, by experiment, substantiated Pflüger's statement. We have been witness of experiment after experiment, every instance of which was negative. And more, in five cases out of seven, the foot of the opposite leg was not attempted to be used even when the frog was *not* decapitated. But even if the assertion, which Darwin sanctions, were true, could it be a case of associated habit? In all probability neither that frog, nor his greatest grandfather, ever performed such an action before. How, then, could it be the effect of association? And how is the unconscious decapitated frog to conclude that one leg, failing of its object, he must try the other?

Still more open to objection is the use Mr. Darwin makes of his second principle, which he calls Antithesis. It declares that certain movements being the natural accompaniment of a given state of mind, the entirely opposite movements will express the reverse state of mind. For example, a dog approaching with hostile intentions, does so with firm attitude, head raised, tail erect and stiff, the hair bristled, the ears pricked, and the eyes staring. Let the dog discover that the person he approaches is not a stranger but his master, and his whole attitude is changed; his body sinks, his tail is lowered and wagged from side to side, the hair is smoothed, the ears depressed, and drawn backwards, and the lips loosened. Mr. Darwin asserts that these movements are of no value whatever to the animal; but they result simply from the fact, that the attitudes are opposite, hence their expression is antithetical. But surely an appeal to the mental condition of the dog leads to a simpler explanation. In rage, and the feeling of hostility, there is a tension, as it were, a rigor, exactly correspondent to the rigidity of every prominent feature of the canine body; in the opposite mental state of affection, a delicious complacency is felt; there is no mental tension, merely receptiveness, hence the opposite condition of body. The antithesis is not physical in its origin; it is mental. Besides, this takes for granted that the existence of any emotional expression in an animal involves its opposite. But there are animals that exhibit humility, and possess not a trace of rage; and others in which rage exists without a trace of gentleness. Nor is this all; such a doctrine makes hostility the emotion out of which affection springs!

There can be no love until its antithesis, hate, has been realised! But is it not much more consonant with fact to find affection developed before rage is ever shown? Does not the tiger's cub have affectionate feelings for its mother before it rages on its foe? And in both cases is it not the result of a desire to express these emotions, rather than a mere accidental result? In truth, Mr. Darwin's reasoning here is the Positivist's dogma over again; the means exist, not for the end, but the end is accomplished because the means exist. Certain expressions are expressive because they were originally of service; not of service because they were expressive, and yet in a careful study of brute and human life, is not the latter the natural conclusion? In

man, an almost universal mode of expressing helplessness is a shrugging of the shoulders, a contraction of the muscles of the forehead, exactly opposed to those contracted in a frown, the lower jaw is dropped and the hands are opened. These are the reverse activities to those used in the expression of rage. They are therefore supposed to sustain the doctrine of antithesis as their cause. But here, again, mental tension and mental relaxation, acting oppositely on the physical system, produce opposite results. It is not the inheritance of an old serviceable habit from the brute, but the direct action of mind upon nerve and muscle.

The third principle affirms that certain expressions of mental states are wholly independent of will or habit, but are the direct results of the constitution of the nervous system. Thus, trembling, when excited by fear or rage, is of no service to the being so affected, but is the immediate result of nervous excitement. The hair changing colour under the influence of grief is another example. The intense excitement of the great nervous centres interrupts their normal action. But our author concludes that even this superfluity of power may expend itself along certain channels, so as to be serviceable to the animal; and to this cause partly the bristling of the hair in enraged brutes is ascribed, while a frequent accompaniment of insanity is a bristled condition of the hair. There is, undoubtedly, truth in this last principle, and its application is far wider than either of the two preceding. It ascribes to the direct action of the brain, and therefore (as we maintain) of the mind, emotional expression. A very careful consideration of the causes of blushing is given us under this head, and with results that from a physical point of view are extremely satisfactory.

Blushing is a peculiarity of man. It is shared by none of the brutes; but it has been observed in almost every human race. Mr. Darwin denies that it is a special endowment for the expression of modesty, because it is invisible in the darker races of men. It is caused, he says, by self-consciousness, directed mostly to personal appearance, especially to the face; and he suggests that attention directed solely to any part of the body interferes with the ordinary action of the small arteries of that part, from which cause they relax and become filled with arterial blood. Blushing may cover a large proportion of the body, but is chiefly confined to the face: that is the part constantly exposed, and to which attention is specially directed. The probability of this being an approximately correct explanation is heightened by Dr. Beale's recent discovery of the distribution of minute nerves to the capillaries themselves, thus bringing the entire circulation under the influence of the nervous centres. But we apprehend that blushing is rather a symptom of feeling than its expression. It is almost always obnoxious to the person conscious of it and would rather be suppressed, if possible, than expressed, proving that mental states do, and must, directly influence the physical system.

On the whole this book may be read with profit by those interested in the question, provided it be remembered that none of the facts given by the author are necessarily sequences from "natural selection." The manner in which this is attempted is sometimes revolting. For example, the power which music has at times of exciting in us in an undefined but majestic manner, the profoundest emotions, is ascribed to the recalling of the "strong emotions which were felt during long past ages, where, as is probable, our early progenitors courted each other with vocal tunes!" Thus the howl and quiver of an impassioned brute was the origin of the sublime ecstasy which uplifting music may awake within the soul! Again, Mr. Darwin says, that when we perform a little action that is difficult—such as the threading of a needle—we close our lips firmly, he presumes, in order to prevent disturbance by breathing. Now, he saw a young orang killing flies on a window pane with its knuckles—a difficult task—and at each attempt the lips were firmly pressed as in man. Hence ours is an inherited peculiarity! Of course the fact that both man and monkey, in their performance of delicate acts, would require to exclude the disturbing element of breathing as much as possible, might explain its independent origin in both; but this is too simple for Mr. Darwin. Similarity of organ, or similarity of action, no matter how otherwise this similarity may be explained, are marshalled by our author as indubitable evidence of a common origin. While all this is put forth *as* speculation, we need not mind, but when, as is frequently the case in this book, it is treated as though it was indisputable truth, we hold it to be inimical to the best interests of science, and in the last degree unsound in philosophy.