

THURSDAY, JANUARY 8, 1874

VIVISECTION

THE question of the propriety of vivisection has ever and anon cropped up for the last two centuries, and learned and unlearned persons have not been found wanting to condemn the practice. Amongst the latter the term vivisection has been taken to mean the dissecting of animals alive, with no other motive than curiosity or a malignant desire to be cruel to animals.

This arises from the utter and entire ignorance, on the part of the great mass of the public, of the scope and nature of physiology or the laws of life. If the elements of this noble and most useful science were taught in our schools as they should be, the unmeaning outcry against the practice of "dissecting live animals," as it is called, would not be heard. People would then know that the wonderful knowledge now possessed by man of the functions of his body has mainly been acquired by experiments on living animals, and that by the practice of vivisection is not meant the dissection of living animals, but the performance of experiments by which the nature of the functions of living beings may be ascertained.

Whatever excuse may be made for the public on account of their ignorance, there ought not to be any for men belonging to the medical profession, who should know the history of the science of physiology and the dependence of all true practice of medicine and surgery on the laws of life, mainly gained by humane and careful experiments upon living animals. These men would be answerable for much human suffering and premature death if they compelled men of science to give up the practice of studying the laws of human life and arrest the hand of Science in investigating the functions of living animals by inspection and experiments.

We feel almost ashamed in the present age to have to speak of the grand results which have been reaped by mankind from the observations of our great physiological discoverers in experiments on living animals. To begin with Harvey, whose name is a household word amongst us, and one of the grandest on the long page of England's discoverers; it is no perversion of words to say that he could not have discovered or demonstrated the circulation of the blood without the aid of vivisection.

In his great work, "An Anatomical Disquisition on the Motion of the Heart and Blood in Animals," he heads the second chapter "Of the motions of the heart as seen in the dissection of living animals." In this work he gives detailed accounts of his experiments, and also of those performed before the noblest and most learned in the land, who did not object to Harvey's experiments, but felt they were witnessing the demonstration of a truth that would for ever be a benefit to mankind. Had public opinion, had the Government of the day, instead of encouraging Harvey proceeded to prosecute him for cruelty to animals, then mankind would have lost a discovery that has saved myriads of human lives from torture and premature death by disease.

The discovery of the circulation of the blood produced an immense revolution in the practice of medicine and surgery. Counting the pulse became an intelligent aid to

the diagnosis of nearly all diseases. Operations for the relief of disease were undertaken with fearlessness and the greatest success. The nature of aneurism and its means of cure were now understood. This last disease was studied and the surgical operation for its cure almost perfected by experiments on living animals by John Hunter. This great anatomist also made most important contributions to our knowledge of the nature of venous absorption, by his operations on animals. Nearly all the advances that have taken place in the treatment of aneurism since the time of Hunter have been made by experiments on living animals, amongst others we may name those of Spence, of Edinburgh.

Only to mention names rising to the surface from the greatness of their discoveries, we refer to Sir Charles Bell, to whom we are indebted for a knowledge of the nature of sensationary and voluntary nerves and their double origin in the spinal cord. These discoveries were made by experiments on living animals, and belong to a series which cannot be performed by the aid of anæsthetics, as the very essence of them consists in demonstrating that whilst one set of nerves is devoted to the feeling of pain, the other is the means of producing locomotion.

Another almost equally important discovery, the nature of the excito-motory action of the nervous system, was demonstrated by experiments on living animals by Marshall Hall. To say that these discoveries of Bell and Hall have had no influence on pathology and therapeutics, is to deny the experience of every medical practitioner in the kingdom—is to proclaim that the science of medicine is now practised on the system pursued by physicians and surgeons previous to the time of the discovery of the circulation of the blood. Numerous are the discoverers who have made great advances in our knowledge of the functions of the nervous system, by observations on living animals, who still live to be honoured for the advances they have made in that science which leads to the amelioration of human suffering. We need but mention here the names of Brown-Sequard and Ferrier. No human mind could have guessed at the conclusions at which they have arrived, but they have done so by the sure and certain method of observing facts in the living organism.

We might go on and fill our pages with the memories of great men who have not hesitated, for the benefit of mankind and the advancement of Science, to sacrifice the life of the lower animals. Majendie was accused in Paris of cruelty to animals, but his experiments led to a more accurate knowledge of the influence of medicines on the animal frame, and the introduction of a number of new remedies, which are still in common use. Blake, by the introduction of saline substances into the blood of living animals, showed what was the action of these matters on the blood, and he produced a sensible effect on the practice of medicine.

To the instructed this will seem a meagre list; but we hope enough has been said to show that to deny the utility of experiments on living animals is to deny that medicine has advanced at all during the last two centuries and a half, and to admit that the guesses of uninstructed practitioners are as good as the practice of the most cultivated practitioners of medicine and surgery.

Against this proof of the benefits of vivisection it has

been urged that man has no right to inflict pain on animals. The same argument has been urged against the destruction of the life of animals at all, and the adoption of a vegetarian diet has been the result. It is surely not needful to answer the last argument here, but in a degree the answer is the same against giving pain to animals; if we take animal life for the purpose of food, it is only taking the life we have given us for the purpose of our existence; and in giving a minimum of pain to animals we give it for the higher purposes of securing human life and freedom from pain. It is curious to see those who defend the cruel sports of fox-hunting, hare-hunting, and partridge and pheasant shooting exclaim against the cruelty of vivisection. Yet it could be clearly shown, we believe, that those physiologists who are in the habit of practising vivisection would not be found at Hurlingham taking part in pigeon-shooting, or meeting with the hounds in any part of the country. In fact, so far from producing a hardening effect on the mind, these experiments seem to engender in the mind of the observer a love and a care for the brute creation, that does not exist in the mind of an ordinary person. A celebrated entomologist, in answer to the objection made to the pursuit of his science, the destruction of the life of insects, made answer that his habit of observing insects had induced him at various times to save more lives of insects—as flies from the cream-jug and tea-cup—than he had ever destroyed to make his entomological collection.

The question still arises whether the experiments that resulted in the discoveries to which we have referred should be repeated for the instruction of a class, or be regarded as final? Many physiologists think that the renewal of the experiments in the form of a demonstration before a class is not necessary. This position, however, cannot be maintained, if regard is had to the good of mankind. He would be a poor chemist who did not re-perform the experiments of those who had gone before him; and the natural philosopher could not make progress in his science if forbidden to repeat the observations of his predecessors. It is not only necessary to make good practitioners of medicine, and surgery that these experiments should be repeated but it is necessary for the advancement of the science of physiology.

Of course all these experiments should be performed with the greatest attention to diminishing pain to the utmost extent. Happily, by the use of anæsthetics, we can now do this so that an animal does not suffer more than it would in passing out of existence in any other way. And we are glad to find whilst writing this, that Prof. Schiff, of Florence, who has been so unrighteously assailed for these experiments, in a letter to the *Times* completely refutes all the charges brought against him, never failing to administer anæsthetics in the performance of these operations.

THE RELATION OF MIND AND BODY

Mind and Body. The Theories of their Relation. By Alexander Bain, LL.D., Professor of Logic in the University of Aberdeen. (Henry S. King and Co., 1873.)

IN this volume, which forms one of the international scientific series, the thoughtful reader is once more called on to consider those leading positions in psycho-

logy for which Prof. Bain has so long and so ably contended. He has here succeeded in presenting his views in language as concise, clear, and popular as the nature of his subject will permit. Whoever attaches importance to the application of scientific method to mental phenomena must welcome this popular statement of doctrines, which, if not the whole truth, are immeasurably nearer the truth than are the superstitions to which not only the uneducated, but also the great mass of the learned, are subject.

It is already known that Prof. Bain has given his adhesion, more or less fully, to the doctrine of inheritance in the region both of intellect and emotion—a doctrine without which the “experience” philosophy was utterly inadequate to explain the known facts. We may therefore be allowed to regret that he has not in this volume given more prominence to a conception without which his own system is but a half truth plus something of positive error. We are disappointed, for we certainly expected more than grudging references to “the new theory.”

We have before now indicated our opinion that there is something wrong about Prof. Bain’s celebrated theory of the Will; and we cannot now refrain from observing that in the present volume he seems to us to make the weakness of his position more manifest by placing alongside of his old theory some of the clearer and more thorough conceptions of recent development. “The distinguishing peculiarity of our voluntary movements,” says Prof. Bain, “is that they take their rise in Feeling, and are guided by Intellect.” Now our contention is, that there is no fact in nature corresponding to this description. Taking it for granted that “feeling” and “intellect” here mean facts of consciousness, and not physical facts—the objective activity of nerve cells and nerve fibres—we assert (1) that taken in the lump it is an expression of the popular notion, which Prof. Bain rejects, that the body is governed by the mind somewhat in the same way that the horse is governed by his rider; (2) that looked at closely it is a string of words making up a proposition that cannot be represented in thought. In support of the first point in our criticism it must suffice to show that Prof. Bain’s teaching with regard to the will is relied on by the most thoughtful advocates of the doctrine of the soul—a belief against which Prof. Bain has been fighting all his life. A perfect example of the way in which Prof. Bain’s theory is interpreted in favour of the hypothesis of a soul will be found in Mr. Lowne’s “Philosophy of Evolution.” We had recently occasion to make a few remarks on this essay, and we cannot now do better than quote part of what we then wrote:—“It is in studying the phenomena of volition (as understood by Prof. Bain) that Mr. Lowne finds the unmistakable evidence of a spiritual clerk employed in working the nervous apparatus. . . . Comparing the nervous system to a complex telegraphic system, he says:—‘If the electric fluid became periodically liberated and affected all the instruments at once, or in a given succession, mechanism alone would account for the phenomena (reflex action); but if the electric current were always utilised according to ever-varying conditions which do not bear any direct relation to the manner in which the effect is produced—that is, which are them-