

The address in surgery, read at Chester, August 9, 1886, at the twenty-fourth annual meeting of the British Medical Association / by William Bowman.

Contributors

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I AM glad, Sir, that the rejection of this Bill has been moved by my hon. friend the Member for Oxfordshire (Mr. Cartwright), who is entirely unconnected with the Medical Profession ; and I second his Motion, because I am intimately connected with it, having many hundred medical constituents, and representing, as I do, the largest medical University in the world.

I will try to avoid the subjects so ably treated by my hon. friend. I would, however, emphasize what he has said. This Bill does not only deal with vivisection in the abstract, but it seeks to repeal the Act passed in 1876 for so regulating vivisection as to produce either no suffering, or the minimum amount of suffering, in animals experimented upon. My hon. friend the Member for Hereford (Mr. Reid) proposes to abolish all experiments on vertebrate animals for the purposes of physiology, medicine, or science. The experiments prohibited are not confined to painful ones. Under the plain interpretation of this Bill, a man could not stroke the back of a cat, to show a student that electricity was developed, without committing a crime, and could not give a constipated patient a dose of castor oil, as an experiment, to see whether he could do without a drastic dose of croton oil. This is positively the case, unless my hon. friend is prepared to deny that a man is a vertebrate animal. The Bill not only repeals the regulating Act of 1876, but it renders illegal all experiments on animals made for the purposes of physiology, medicine, and science, even if they are wholly innocent and painless. A physiologist, after this Bill becomes law, could not put the web of a living frog under a microscope to show the circulation of the blood.

Now, my hon. friend the Member for Oxfordshire has explained the nature of the Act which it is proposed to repeal. It provides that all painful experiments, with the rarest exceptions, must be made when the animals are unconscious under anæsthetics. As a matter of fact, only 1 per cent. of all the experiments made under the Act is as painful as a surgical operation. Of the 300 experiments made last year, only ten were attended with real pain. The Reports of the Government Inspector for Great Britain, Mr. Busk, and of the Inspector for Ireland, Dr. Stokes, are conclusive on this point. The question is not only whether vivisection, in the abstract, may or may not be right, but whether a regulating Act, which was passed in the year 1876, and which the Government Inspectors assure us works well, and enforces the utmost possible diminution of pain, is to be repealed.

The hon. Member for Hereford, to prove that experiments were cruel, cited experiments made before the regulating Act was passed. He described, in terms which, to those unacquainted with physiology, appear horrible, some experiments made on the brains of cats and monkeys by my constituent, Dr. Ferrier. But he did not explain that the animals on which these experiments were made were wholly unconscious, and not susceptible to pain. This is fully proved in the evidence before the Royal Commission. The hon. Member for Oxfordshire has, however, answered these allegations, as well as those against Professor Rutherford, so I will not repeat his reply. With these exceptions, the hon. Member for Hereford, and the societies which back his efforts to prevent vivisection, chiefly rely on cases of alleged foreign cruelties, although such are impossible under the present law in England, and are now, as they have been at all times, repugnant to the spirit of the English physiologists. That some of the old experiments, made before anæsthesia was discovered, were carried on in France and other foreign countries, with an indifference to animal suffering that was truly horrible, I entirely admit. That they are still carried on in foreign countries without due regard to the use of anæsthetics, is, I fear, only too true, although to a much less extent than formerly. But we are not called upon to legislate for foreign countries; we are asked to repeal an Act which has worked well in England, and to substi-

tute for it another Act, which prohibits all physiological experiments in this country. And yet the evidence is conclusive that English physiologists have always been remarkable for the careful and humane consideration with which such experiments have been made. The hon. Member for Hereford does not care for proofs that experiments on animals have been carefully and humanely practised in England. His Bill proposes to abolish them altogether as being opposed to the moral law. I at once make the admission to my hon. friend that I am bound to traverse this argument, and not to shelter myself under the fact that he is attacking a mere microscopical point in the field of animal suffering. It is no sound argument against his Bill to say that, because only 10 out of the 300 animals experimented on last year suffered considerable pain, therefore it is right to continue such experiments. The real question is, whether there is a justification for sacrificing or inflicting suffering on any animals with a view to benefit man? You do not doubt this in the case of noxious animals. Last year, in India, we hunted down, without mercy, 6,000 tigers and leopards, besides many wolves, and we paid for killing 300,000 snakes. And what was our justification? It consisted in the fact that they had killed more than 20,000 of the Natives of India.

The justification is that man's duty to man is greater than man's duty to beasts.

The benefit to man is, in fact, our only justification for a vast amount of pain which we are constantly inflicting on animals during their lives. How otherwise can the farmer justify the cruel mutilation of oxen, sheep, or swine, to improve their condition for food, or of horses, to fit them for labour? How otherwise could we justify the cruel and continued punishment of animals when we employ them in labour? If I thought that a comparative argument as to cruelty had much force, I could allude to the continued sufferings of the horses, mules, and camels in the Afghan and Egyptian Wars, in terms which would be too horrible for this House to listen to. But even in the relation of man to man, how, otherwise than by a common or national benefit, could we justify the sacrifice of whole battalions in assaulting fortified positions? Or how could we justify the frightful suffering which a surgeon inflicts when he

excises a joint, or cuts out a huge tumour? How otherwise could you justify a parent when he corrects a child, or the State when it flogs a garrotter? It is not the mere, or even the continuous, infliction of pain which is an offence against moral law, but the unnecessary infliction of pain without an adequate motive to benefit mankind by the act. It is not the mere act, but the motive for that act which either makes it an offence against morality, or gives to it a justification.

Still, you may grant the motive, but deny the necessity. I need say little as to the motive. Unquestionably the motive is a high one which seeks to extend our knowledge of life and disease, so as, by a few experiments on animals, to ameliorate disease and suffering, not only in the whole human race, but also in all the animals which come in direct relation to man. This is so clear that it requires no argument in its support. The opponents of vivisection, however, deny its utility under all circumstances, because they assert that experiments on animals give no results to be relied on as regards the human body. This is only one of the ordinary appeals to human vanity, which seeks to find a wide abyss between man and other animals. It is altogether contradicted by the discoveries of modern science. Except in regard to his highly developed brain, man does not differ widely in his bodily functions from other animals. As Aristotle has truly said: "Nature never marches by leaps." There is a continuous chain, with slowly diminishing links, from man to the lowest animal. If you place the blood or flesh of a man and the blood or flesh of a sheep in the most expert chemist's hands, he can detect no difference between them. The same kind of heart, lungs, liver, and spleen is found in the animals experimented upon as in man; and the same anæsthetics, the same drugs or poisons, and the same parasites, act upon man and such animals in the same way. It is quite certain that the observations made upon animals can be applied by physiology to man, for man physiologically is the king of all animals. But I deny altogether that an unskilled public can form an adequate judgment on these points. The utility and the necessity for such experiments are most important considerations, but they must be determined by the opinion of experts. I do not mean by the few

experimentalists, not above forty or fifty in number, but by the whole body of medical men, who devote themselves to the cure and amelioration of disease. They are the qualified judges of the utility and need of making such experiments, and from the results of which they benefit. Outsiders, who have no knowledge of the requirements of surgical and medical science, are not witnesses having a right to be heard in such a case. Now, among 24,000 medical men in this country you will no doubt find a few who deny the utility of such experiments. But the vast majority of the medical profession are emphatic in their testimony. In August, 1881, there was a great International Congress of medical men in London, and the Congress passed the following resolution :—

“That this Congress records its conviction that experiments on living animals have proved of the utmost service to medicine in the past, and are indispensable to its future progress; that, accordingly, while ‘strongly deprecating the infliction of unnecessary pain, it is of opinion, alike in the interest of man and of animals, that it is not desirable to restrict competent persons in the performance of such experiments.’”

This Congress was remarkably representative of all countries, both from the Continent of Europe and of America. But lest you should think it tainted by the presence of foreign experimentalists, I may cite the testimony of the British Medical Association, which, on the 10th of August, in the same year, passed the following resolution :—

“That this Association desires to express its deep sense of the importance of vivisection to the advancement of medical science, and the belief that the further prohibition of it would be attended with serious injury to the community, by preventing investigations which are calculated to promote the better knowledge and treatment of disease in animals as well as man.”

I cannot conceive that the House would reject such testimony, coming from the great body of medical men, and including such names as Jenner, Owen, Paget, Darwin, Carpenter, Sanderson, Huxley, Gull, and a host of others, whose scientific knowledge is only equalled by their broad humanity.

While, however, the House will admit the weight of such testimony, it is entitled to ask what is the nature of the knowledge acquired which has produced this conviction on the minds of the great body of the medical profession.

There are three classes of experiments made upon animals. The first class aims at acquiring knowledge concerning the processes of disease ; the second is concerned with the action of drugs or poisons ; and the third tests the origin of disease by actually producing it.

The first class seeks for knowledge of vital processes, or diseased conditions. Such experiments were made by the ancients, and, since medicine became a science, by physiologists in our own country. The great discovery of the circulation of the blood by Harvey was determined by experiments on a variety of animals, and was ultimately demonstrated before Charles I. and the Princesses upon a living animal. In the progress of such experiments by men like Harvey, Hunter, Bell, Brodie, and many others, great and leading discoveries, such as of the circulation of the blood, the lacteal and lymphatic system of vessels, and the compound function of the spinal nerves, were established. Such experiments, probably, often originated in the love of knowledge only, without immediate reference to its application to the amelioration of human or animal existence.

But nothing is more shortsighted than the utilitarian cry of the ignorant against investigators in science. It is as superficial as the remark of Savarin, when he said "He who invents a new dish does more for humanity than he who discovers a star." But exactly as navigation is an outcome of astronomy, or as bleaching or dyeing is an outcome of chemistry, or as engineering is an application of mathematics, so is medicine an outcome of the sciences of physiology and pathology. To strangle these sciences, by refusing to them the only modes of research which render their progress possible, would be to relegate the medicine of the future to empiricism and quackery. Indeed, nothing is more certain than that every abstract truth given to the world constantly leads to the most unexpected and most useful applications to humanity. Thus, when Galvani put a copper hook through the spine of frogs, and hung them on the iron rails of his balcony at Bologna, in order to study the muscular contractions which were thus produced, who could have predicated that this experiment was to originate the science of Galvanism, and lead to the discovery of the electric telegraph, to the electric light, to new motors for our

machinery, and to the important use of electricity in the cure of disease and relief of human suffering? So it is with other discoveries in physiology, which, even when they appear remote from practical application, constantly lead to the most important benefits. Thus, when Pasteur and Lister made experiments on the minute organisms which appear during fermentation and putrefaction, who could have predicated that the experiments of the former philosopher would have opened up to such a wide field of promise in the treatment of diseases which afflict our flocks and herds, or that the observations of Lister would give us that admirable method of antiseptic treatment which now ranks as one of the greatest improvements of modern surgery? And yet Lister had to go abroad to perform a few experiments on animals, as the present Act was too restrictive for him to perform them in this country, though the pain inflicted was no greater than the healing of some slight wound. When you recollect the horrible pain which used to be inflicted after a surgical operation, by burning the bleeding vessels with a red-hot iron, the successive steps in surgery that have attended experiments in the healing of wounds, and which have culminated in the antiseptic treatment of Lister, have surely justified the small amount of brute suffering by giving comparative safety to the most formidable surgical operations in the case of man.

The second class of experiments, with drugs or poisons, are sometimes absolutely necessary, not only in the interests of medical science, but in the cause of justice. The promoters of this Bill would not even allow experiments in the cause of justice. For myself, although formerly a Professor of Chemistry in the greatest medical school of this country, I am only responsible for the deaths of two rabbits by poison; and I ask the attention of the House to the case, as a strong justification for experiments on animals. And yet I should have been treated as a criminal under the present Act, had it then existed. Sir James Simpson, who introduced chloroform—that great alleviator of animal suffering—was then alive, and in constant quest of new anæsthetics. He came to my laboratory one day to see if I had any new substances likely to suit his purpose. I showed him a liquid which had just been discovered by one of my assistants, and Sir James Simpson,

who was bold to rashness in experimenting on himself, desired immediately to inhale it in my private room. I refused to give him any of the liquid, unless it was first tried upon rabbits. Two rabbits were accordingly made to inhale it; they quickly passed into anæsthesia, and apparently as quickly recovered, but from an after action of the poison they both died a few hours afterwards. Now, was not this a justifiable experiment on animals? Was not the sacrifice of two rabbits worth saving the life of the most distinguished physician of his time—of one, who, by the introduction of chloroform, had done so much to mitigate animal suffering? Would that an experiment of a like kind on a rabbit, or a guinea-pig had been used by John Hunter, who probably shortened his own noble life by experimenting on himself with the ignoble poison of syphilis. Let me give one other instance, in which two valuable lives were sacrificed from want of such experiments. A few years ago two young German chemists were assistants in a London laboratory. They were experimenting upon a poison which I will not even name, for its properties are so terrible. It is postponed in its action, and then produces idiotcy or death. An experiment on a mouse or a rabbit would have taught them the danger of this frightful poison; but, in ignorance of its subtle properties, they became its unhappy victims, for one died and the other suffered intellectual death. Yet the promoters of this Bill would not suffer us to make any experiments on the lower animals so as to protect man from such catastrophes. It is by experiments on animals that medicine has not only learned the benefits, but also has been taught how to avoid the dangers of many potent drugs, as chloroform, chloral, and morphia.

The third class of experiments is in the production of disease. At the first blush, this would appear to be the infliction of animal suffering without a beneficent motive. But this is the exact reverse of the truth, for no one can know how to prevent disease without knowing how to cause it. Prevention of disease is a much higher aim of medical science than its amelioration or cure. Now, in this class of experiments, the greatest progress has been made in recent years by the sacrifice of a few of the lower animals. A large class of disease, both in man and animals, is now ascertained to arise from the introduction into the system of self-multiply-

ing and destructive germs of a very low class of living organisms. The promoters of this Bill would not deny this, but would say—"Observe the necessary facts when disease occurs, and draw your deductions from them, without experimenting upon animals." So you may, if you are content with the sacrifice of hecatombs of human beings to obtain knowledge which the sacrifice of a few mice or guinea-pigs would equally give you.

Take an instance in point. A foreign experimentalist—Thiersch—by sacrificing 14 mice, found that the germs in choleraic discharges, imbibed through water, reproduced cholera with certainty. The same fact, it is true, was suspected in the cholera epidemics of 1848-9, and of 1853-4, when the Southwark and Vauxhall, as well as the Lambeth Water Companies, supplied water tainted with choleraic evacuations to about half a million of their consumers. In the case of Lambeth, during the first of the epidemics, 125 out of every 10,000 of the population died; but in the second epidemic, only 37; for, in the interval, the quality of the water was improved. But the Southwark and Vauxhall Company made no such improvement, and the cholera deaths were 118 to 10,000 in the first, and 130 in the second epidemic. These experiments with water, charged with fæcal matter, on 500,000 human beings were valuable to medical science, but not in the least more valuable than Thiersch's recent experiments on 56 mice, of which 44 took the disease, and 14 died. Had these been made anterior to the cholera epidemics, the great mortality might have been averted.

It is thus that much needless experimentation on man is constantly saved by a few experiments on animals. The recent experiments made for producing disease in animals are full of promise for the future prevention and amelioration of disease in man. Especially in the case of consumption, which is accountable for one-seventh of the total deaths, and for one-third of those persons who die young. But time does not allow me to describe these. I will only mention one fact, that the milk of consumptive cows is found to produce tuberculosis in animals. As the milk of such cows is frequently distributed, it is surely wise to make some experiments on animals, rather than to parody them on some thousand men and women before the danger is either negatived or affirmed.

The House then will perceive that numerous consequences must flow from the establishment of the fact that many diseases of animals arise from the planting in their blood of minute germs of alien life. Take one instance merely. Since the time when in Egypt there was a grievous murrain, "the breaking forth of blains upon man and beast throughout all the land of Egypt," the same disease *anthrax*, or splenic fever, has desolated the flocks and herds of all countries, from the reindeer in Lapland to the cavalry horses in India. In France, this fever kills sheep to the value of 20,000,000 francs annually. Pasteur has shown how the bacillus, which produces it, may in a milder form mitigate its virulence, by becoming as protective and innocuous as vaccine virus. Large flocks of sheep are now thus protected by it in France.

I do not like quotations from the Bible in this House; but I cannot help recollecting that He who is all merciful has said "How much then is a man better than a sheep." If we extend such protection to man against the attacks of many maladies which are produced by similar germs, the sacrifice of a few mice or guinea-pigs, which would only suffer a short and scarcely sensible pain in inoculation, would surely be justifiable in obtaining a lasting boon to humanity. How much more limited is this infliction of suffering than that of our daily intercourse with animals. If the House desire not to interfere with the cruel operations on cattle to fit them for human food or labour, if it does not wish to stop the inoculations which have produced such important consequences in splenic fever and chicken cholera, in protecting cattle and poultry, why should we be asked to prevent the extension of knowledge for the benefit of the human race?

I am much indebted to the House for listening to me so long on a subject which requires so much scientific explanation; but to my medical constituents, who are numbered by thousands, the decision of the House this day will either carry dismay or satisfaction. I must remind you what the Royal Commission told us would be the consequences of passing a Bill of this kind. They said, to prohibit experiments on living animals—

"Would inevitably lead either to a general evasion of the law, or to a universal flight of medical and physiological investigators to foreign schools and

laboratories, and that by this means, the general treatment of animals would certainly not be altered for the better."

You may retard, but you cannot arrest, the progress of science. Even the burning of the Alexandrian Library did not stop the growth of literature. By passing this Bill you might produce the result which the Royal Commission so much deplotes. This House has already passed an Act to regulate experiments on living animals, and I have shown how successful that Act has been in its operation. You might increase its restrictions; but these are already too tightly drawn, and increased restriction might be followed by evasion. The present Act excludes the unqualified from making such experiments, and entrusts them, with suitable precautions, to the skilled physiologist. Why should you show increased distrust, when there is no evidence of any breach of the existing law? The general presumption of law is, that well-qualified medical men may be trusted for their skill, and for their humanity, even with human life. You allow a medical man to judge whether, in certain cases of childbirth, he may kill the child in order to save the mother; and we are asked to distrust the few and the most specially qualified of that profession to judge whether a mouse, a guinea-pig, or a frog may be sacrificed for the benefit of the human race. You cannot be surprised that, as a representative of a great medical constituency, I should speak warmly on this subject. That profession has always been marked for its self-sacrifice and devotion to the interests of humanity; and its members naturally resent the imputations of cruelty which are made upon them, because they desire that knowledge all-important to man should be extended in the only way which is possible. I do not at all undervalue the humane feelings and sentiments of many of the promoters of this Bill. But much of the out-of-door agitation in regard to it has been got up in a spirit of unthinking and aggressive ignorance. I assert that physiologists are actuated by a higher humanity than that of the opponents of vivisection. Their aim is to mitigate the sufferings of humanity by studying the processes of life and of disease. The only way in which they can prosecute this aim is to experiment on living beings, not on dead corpses.

The total number of laboratories in the whole world engaged in studying the laws of life, with a view of lessening the immense amount of suffering among all animated beings are but few in number. In this country, at least, they are conducted and regulated under an Act which has given statutory effect to the pervading spirit of English physiologists, that the experiments on animals should be made with a minimum amount of suffering.

I cannot believe that this House will give a second reading to the Bill, which would drive English physiologists to foreign countries, or make them work secretly to evade an unjust law, and would thus brand as criminals men whose whole object is to ameliorate the condition of suffering humanity. Limited as is the scope of this Bill, its purpose is to repeal an Act under which the official inspectors assure us that scarcely ten animals in the year suffer sensible pain ; but it would take no account whatever of the torture or cruelty perpetrated upon animals out of the most wanton and purposeless malignity. [Mr. R. T. REID : That is a crime already.] I beg your pardon. It is not a crime already. It is a crime only in the case of domestic animals. I say, it is only experiments made with the noble motive of relieving the ills of suffering humanity with which you propose to interfere. The existing Cruelty to Animals Act, called Martin's Act, is confined to domestic animals only. All other vertebrate animals are excluded from the operation of that Act. If this Bill passes into law, no more protection is given to them, however wantonly, wickedly, and cruelly any boy or man may treat such animals. It would be a complete defence under this Bill to show that the most cruel experiments were made out of pure malignity, and without any reference to the promotion of physiology, medicine, or science. But as soon as the motive is high, noble, and humane, you propose to brand those who experiment as criminals.

I cannot believe that this House will consent to pass a Bill which has originated in philanthropy, but in a philanthropy wholly indiscriminate, and which, I believe, will infinitely augment the animal suffering that it ignorantly seeks to alleviate.