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THE INQUISITION OF SCIENCE.

By MONA CAIRD.

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THE INQUISITION OF SCIENCE.

By MONA CAIRD.

DURING the last few years, there has been a considerable growth of public feeling antagonistic to the practice of experiments on living animals, although the feeling has had to make its way against a strong tide of medical fashion set in exactly the opposite direction. This tide naturally still carries away with it the vast majority of the public, who believe that the question is one to be left entirely for the decision of the profession, and that an Act of Parliament regulates and restricts the practice, so that no cruelty is possible. The belief is almost universal, even among those from whom more careful statements might be expected, that all operations—except mere pin-pricks—are performed under anæsthetics.

This paper has been written with a view of examining the basis of this popular belief, and of giving the facts of the case, not as a mere counter statement of my own, but by a series of quotations from physiological works, and from the Vivisection Act,* a document whose character appears to be absolutely unknown to those who rely upon it with so much confidence. The reader may judge for himself

* Entitled "An Act to Amend the Law relating to Cruelty to Animals (15th August, 1876)," and known briefly as "The Cruelty to Animals Act, 1876."

whether the popular words *exaggeration* and *misrepresentation* (which no well-furnished vocabulary should be without) can be applied to these extracts from the writings of physiologists who describe their own experiments.

Even a careful perusal of the Vivisection Act alone, must reveal to the clear-headed its utter uselessness as a protection to the animals; for any restriction imposed on the operator by one clause of the Act, is promptly removed by another, with the most finished exactness; so that the experimenter has only to decide under what conditions he intends to perform an experiment, and he is at once supplied with a certificate precisely answering to his requirements.

For instance, if he wishes merely to make a simple experiment under anæsthetics (nominally or really), and to kill the animal before recovery from their influence, the ordinary license will suffice for his purposes; but if he desires to let it live on, in order to study the after results of the operation, he must apply for a certificate signed by two persons, one being the President of the Royal Society, or of certain other societies mentioned in the Act (among them, significantly, occurs the President of the Royal College of Surgeons), stating that it is necessary to permit the animal to live, after it has been operated on, for purposes of observation. Further, if he wishes to dispense altogether with anæsthetics, he has only to say so frankly, and he will be provided with a certificate which permits him to do precisely what he pleases.

It appears to be assumed, in fact, that physiologists (unlike ordinary erring mortals) are to be absolutely and entirely trusted in matters connected with their

own avocations and interests, so that in the Act, which has been framed ostensibly to regulate their experiments, its clauses are carefully arranged so as to provide the experimenters with special charters for whatever they happen to aspire to do. There is not even a limit of the time during which an injured animal may be kept alive for study, after an experiment. It is provided only that it be killed when the object is attained, and that (as we see by the physiological records), may take days, and weeks, and months.

I have below copied out, in parallel columns, the restrictions of the Vivisection Act, and the instructions for evading them:—

PROHIBITION.

The experiment must be performed with a view to the advancement by new discovery of physiological knowledge or of knowledge which will be useful for saving or prolonging life or alleviating suffering:

The animal must during the whole of the experiment be under the influence of some anæsthetic of sufficient

PERMISSION.

Experiments may be performed not directly for the advancement by new discovery of physiological knowledge, or of knowledge which will be useful for saving or prolonging life or alleviating suffering, but for the purpose of testing a particular former discovery alleged to have been made for the advancement of such knowledge as last aforesaid, on such certificate being given as in this Act mentioned that such testing is absolutely necessary for the effectual advancement of such knowledge;

Experiments may be performed without anæsthetics on such certificate being given as in this Act men-

power to prevent the animal feeling pain ;

The animal must, if the pain is likely to continue after the effect of the anæsthetic has ceased, or if any serious injury has been inflicted on the animal, be killed before it recovers from the influence of the anæsthetic which has been administered ;

The experiment shall not be performed as an illustration of lectures in medical schools, hospitals, colleges, or elsewhere ;

tioned that insensibility cannot be produced without necessarily frustrating the object of such experiments ;

Experiments may be performed without the person who performs such experiments being under an obligation to cause the animal on which any such experiment is performed to be killed before it recovers from the influence of the anæsthetic on such certificate being given as in this Act mentioned, that the so killing the animal would necessarily frustrate the object of the experiment, and provided that the animal be killed as soon as such object has been attained ;

Experiments may be performed under the foregoing provisions as to the use of anæsthetics by a person giving illustrations of lectures in medical schools, hospitals, or colleges, or elsewhere, on such certificate being given as in this Act mentioned, that the proposed experiments are absolutely necessary for the due instruction of the persons to whom such lectures are given with a view to their acquiring physiological knowledge or knowledge which will be useful to them for saving or prolonging life or alleviating suffering ;

The final "restriction" as regards the use of dogs and cats, horses, asses and mules for experiment, is cancelled in the same breath, without the ceremony of a separate section, as follows:—

"Notwithstanding anything in this Act contained, an experiment calculated to give pain shall not be performed without anæsthetics on a dog or cat, except on such certificate being given as in this Act mentioned, stating, in addition to the statements hereinbefore required to be made in such certificate, that for reasons specified in the certificate the object of the experiment will be necessarily frustrated unless it is performed on an animal similar in constitution and habits to a cat or dog, and no other animal is available for such experiment; and an experiment calculated to give pain shall not be performed on any horse, ass or mule except on such certificate being given as in this Act mentioned that the object of the experiment will be necessarily frustrated unless it is performed on a horse, ass, or mule, and that no other animal is available for such experiment."

Finally, it is enacted that:—

"The substance known as urari or curare shall not for the purposes of this Act be deemed to be an anæsthetic."

This, curiously enough, is not contradicted anywhere, but the physiologists evidently regard the omission as a careless oversight, out of keeping with the general sense of the Act. At any rate curare (a drug which paralyses motion, and leaves sensation intact)* is frequently stated as being used in experiments, though of course it is impossible to actually

* (1) The celebrated French vivisector, Claude Bernard, in the *Revue Scientifique*, 1871, p. 892, says: "Curare, acting on the nervous system only suppresses the action of the motor nerves, leaving sensation intact." (*Italics mine.*) . . . "Curare is not an anæsthetic." ("En résumé, le curare agissant sur le système nerveux, ne fait que supprimer l'action des nerfs moteurs,

prove that it was used "as an anæsthetic." The merest whiff of some true anæsthetic in addition would keep the operator within the letter of the law; indeed, the law does not forbid the use of curare *alone*, provided only that it be not claimed to be employed under a certificate requiring an anæsthetic.

In view of all this, it seems scarcely worth while to enquire whether or not the provisions of the Act are or could be enforced by means of the inspector's couple of visits per annum, visits expected by the operators, and made by an official who himself seems generally

il laisse la sensibilité intacte . . . le curare n'est pas un agent anæsthésique, c'est un moyen *contentif*."

(2) Further, in his famous paper on Curare, in the *Revue des deux Mondes*, September, 1864, p. 173, the same writer says: "If in fact we now approach the essential part of our subject, we enter by means of experiments into the organic analysis of vital extinction, we discover that this death which appears to steal on in so gentle a manner and so exempt from pain, is, on the contrary, accompanied by *the most atrocious sufferings that the mind of man can conceive*." (Italics mine.) (Si en effet, abordant maintenant la partie essentielle de notre sujet, nous entrons, au moyen de l'expérimentation, dans l'analyse organique de l'extinction vitale, nous verrons que cette mort, qui nous paraît survenir d'une manière si calme et si exempte de douleur, est au contraire accompagnée des souffrances les plus atroces que l'imagination de l'homme puisse concevoir.)

(3) On page 182 he says: "In this motionless body, behind that glazing eye, and with all the appearance of death, sensitiveness and intelligence persist in their entirety. This corpse before us hears and distinguishes all that is done around it. It suffers when pinched or irritated, in a word, it still has feeling and volition, but it has lost the instruments which serve to manifest them." (En effet, dans ce corps sans mouvement, derrière cet œil terne, et avec toutes les apparences de la mort, la sensibilité et l'intelligence persistent encore tout entières. Le cadavre que l'on a devant les yeux entend et distingue ce que l'on fait autour de lui, il ressent des impressions douloureuses quand on le pince ou qu'on l'excite. En un mot, il a encore le sentiment et la volonté, mais il a perdu les instruments qui servent à les manifester.)

to be chosen from the fraternity of vivisectors or supporters of vivisectors.

For, assuming that the visits (few or many) could effect their object by ensuring obedience to the Act, there is absolutely nothing that the Act forbids in the way of atrocious cruelty, provided only it be stated to be "necessary" for a particular purpose of research, and perpetrated under the proper combination of certificates. It would indeed argue black ingratitude, as well as extraordinary ingenuity, to break the provisions of this most affable Act.

The inspector's duty is to see that no animal is put to the torture under any but the correct certificate. Dr. Poore, who has lately resigned the post of inspector, makes no secret of his sympathy with the work of the vivisectors, which he had undertaken to inspect in the interests of the animals.

In the Harveian Oration for 1899,* he speaks of the experimental method in medicine with great enthusiasm. He says:

" . . . the joys of the successful investigator are, probably, the greatest which this world has to give." He alludes to the opposition to vivisection with the usual high disdain of the pro-vivisector. "But, seeing," he adds, "that many honoured members of our profession have themselves been vivisected by the envenomed tongues and sharp pens of a few noisy people,† it may be well to point out that no conviction for cruelty or breach of law has ever been obtained,‡ and that hearsay and the misinterpretation of

* *British Medical Journal*, October 21st, 1899.

† Dr. Poore *does* here seem to recognise that vivisection is a painful process!

‡ Dr. Poore does not seem to observe the humour of this situation. Considering the views he is here expressing, it is difficult to see what likelihood there would be of a conviction for cruelty or breach of law, seeing that this would depend on his own report.

physiological writings is not evidence, at least on this side of the Channel."

The latter sentence is a telling way of putting by inference all anti-vivisectionists on a plane with the persecutors of Dreyfus, a favourite rhetorical device that usually meets with success among those for whom such methods are considered suitable. May we not retort, in this case, that unsupported accusation of misrepresenting physiological works is not evidence either? It would indeed be contrary to experience, if in a heated controversy no misrepresentation and no error of statement had ever taken place. But a thousand errors might have been made, without making it in the slightest degree less clear and provable that physiological works contain accounts of atrocities which defy exaggeration, accounts for which we who oppose the practice can give, and have again and again given, chapter and verse.

Again, we find many experiments quoted as being performed under anæsthetics, when only morphia has been used, morphia being merely a narcotic, not a true anæsthetic. It simply benumbs the animal for a time, but affords no protection against pain such as is caused by the terrible mutilation which vivisection, in its serious researches, involves; experiments on the spinal cord, the sympathetic nerve, the liver, the brain, the eye, not to mention those terrible experiments on the nervous system, which physiologists describe as researches into the "paths of sensation" and the "nature of pain."

I give below references to a few experiments, which can be verified by a morning at the British Museum reading-room, at any moment.

Piercing of brain with hot wire ; * filling veins with Prussian blue, &c. ; † causing inflammation of bones by inserting red-hot needle as deeply as possible ; ‡ “passing a needle into the liver ; ” § inflaming eye by passing thread through cornea. || Cats have been exposed to a rise of temperature, and to very high temperatures. It is recorded that one cat died from heat (*hyperpyrexia*) almost immediately after the temperature of the animal had risen to 46.6° Centigrade in one part and 45° in another, or about 113° to 116° Fahrenheit. ¶ Considering these figures, if one were speaking in ordinary language, it is difficult to see how one could distinguish the operation from that of baking alive. In connection with this series of experiments, the nerves regulating the pulsation of the heart were “cut,” and “stimulated” by “strong galvanization.” It is pointed out by Judge Thornhill ** that to do this it is obviously necessary to remove skin and flesh—that is, partly to flay alive before cutting the nerve. The experiments lasted (1st) 3 hrs. 35 mins., (2nd) 5 hrs., (3rd) 2 hrs. 25 mins., (4th) 3 hrs. 50 mins., and (5th) 3 hrs. After the 90th minute natural respiration ceased, and it had to be continued artificially. Another series of experiments is described

* David Ferrier, “Experiments on the Brain of Monkeys,” “Philosophical Trans.,” 1875, p. 465.

† “Handbook for the Physiological Laboratory,” pp. 97, 113.

‡ *Idem*, p. 159.

§ *Idem*, p. 160.

|| *Idem*, pp. 160-1-2.

¶ Drs. Lauder Brunton and Theodore Cash, the *Practitioner*, October, 1884.

** Mark Thornhill, “English Vivisection.” This pamphlet, published by Hatchards, Piccadilly, in 1885, should be read by all interested in the subject.

by Dr. E. Klein,* in which the eyes of cats were inoculated with diphtheria bacillus, and this, in one case, "led to the formation of a deep crater-like ulcer in the centre of the cornea." In one instance, both eyes of the cat were closed on the 14th day, and the cat was killed on the 17th day, the disease still progressing. In a series of experiments on the nature of pain, the operator records how he produced a crescendo of agony, and noted results as regards respiration, temperature, &c.†

This last mentioned series of experiments, undertaken by the Italian physiologist Mantegazza, I mention here to show what this practice leads to in inevitable sequence, as little by little (and, indeed, often with terrible rapidity) the natural feelings of compassion become blunted by incessantly witnessing intense suffering, deliberately inflicted. On this point I have the first-hand testimony of a doctor (among others) who considers the practice atrociously cruel, and the influence on those who follow it indescribably evil.

Notwithstanding all the above facts, which a little

* Dr. E. Klein, F.R.S., "Further Report on the Etiology of Diphtheria," Appendix B, Medical Report to the Local Government Board, 1889.

† Paolo Mantegazza, "Fisiologia del Dolore," Florence, 1880. The following passage occurs on page 95: "Io invece ho raggiunto lo scopo in due modi diversi, o esagerando il dolore in modo che la sua influenza soverchiasse d' assai l' azione dei moti muscolari o in gran parte la togliesse; o piantando chiodi acuti e numerosi attraverso le piante dei piedi in modo da rendere immobile o quasi l' animale, perchè ad ogni movimento avrebbe sentito molto più acuto il suo tormento. In questa maniera io diminuiva i movimenti in due modi e coll' intervento della volontà dell' animale e del suo istinto conservatore, e col produrre quella forma intensa di dolore. . . ."

study of physiological works, or a mere reading of the Act, might make obvious, the average person lightly asserts that experiments are all performed under anæsthetics, and that no pain worth mentioning is caused by vivisection. The blessed word anæsthetics has, in fact, lulled the public to sleep.

Dr. Hoggan, who commenced his career in the vivisectional laboratory, states that there is great difficulty in distinguishing insensibility from death—

“ . . . especially in some of those classes of animals that are most generally employed as the subjects of physiological experimentation. Many of these die apparently before they can become insensible through chloroform, some of them, indeed, as soon as it has been administered. The practical consequence of this uncertainty is that *complete and conscientious anæsthesia is seldom even attempted, the animal getting at most a slight whiff of chloroform, by way of satisfying the conscience of the operator, or of enabling him to make statements of a humane character* . . . even where complete insensibility has been produced at the beginning of an operation, this effect only lasts for at most a minute or two, and during the rest of the operation, lasting perhaps for hours, the animal must bear its torture as it best may. Continued insensibility could only be maintained by continued careful administration by a special assistant. . . . This, I believe, is seldom, if ever done, . . . this leaves entirely out of sight *that numerous class of operations in which anæsthetics cannot be used, as they would interfere with the correctness of the results*: and where, if used, they would render the experiment worse than useless. . . . Personally, I may add, that the first experiments which I attempted to make as a student in my own private room, failed, because in my anxiety to produce anæsthesia, I found that the animal had died before the experiment could be commenced: this, too, at a time when I had much experience in administering chloroform in the operating theatre of the hospital. I, therefore, gave up the idea of trying such experiments, until I had had an opportunity of seeing how

experienced vivisectors manage it. I have since then had ample opportunity of seeing, and the result of my experience was embodied in a remark I made in a letter published three months ago, that 'I am inclined to look upon anæsthetics as the greatest curse to vivisectible animals.'**

The more we read on the subject, the clearer it becomes that the vivisector is placed on the horns of a dilemma. If he uses an anæsthetic, the effects of the drug interfere with the results of the experiment, and a false answer is its inevitable result: if he works without an anæsthetic, the anguish of the creature throws the nervous system into tumult, and alters the whole processes of the body, and so the answer is again falsified. This must be so, by the very nature of the case. Thus it is we find the same experiments on the same kind of animals giving entirely different results.

Bearing in mind Dr. Hoggan's testimony regarding anæsthetics, let us turn to one of the most striking of recent physiological publications, Dr. Crile's book on *Surgical Shock*.† It is published in America, but the first sixteen experiments, as the author says in his introduction, were performed in the laboratory of University College, London, by the permission of Professor Victor Horsley, whom Dr. Crile thanks for his kindness, and for many valuable suggestions.

We see, therefore, that one of our best known vivisectors regards with sympathy and is ready to give facilities for methods of research such as are here openly described. The book, in the author's own

* *Spectator*, May 29th, 1875.

† "An Experimental Research into Surgical Shock; an essay awarded the Cartwright Prize for 1897." By George W. Crile, A.M., M.D., Ph.D. Published: Philadelphia, J. B. Lippincott Company.

words, records "Experimental research into surgical shock" "by the infliction of different injuries."

He states, with misleading effect, at the beginning, that the experiments were all performed under an anæsthetic, but, as is usual among physiologists, he gives no definite information as to the kind of anæsthetic used, or the time and manner of its administration; and he severely strains one's powers of belief in the possibility of keeping the animal insensible for one and two hours, during a series of such awful mutilations as he describes. Indeed, as a matter of fact, he does not anywhere claim that the animal was kept insensible throughout. Doubtless, the creature was quieted while it was being placed in position for experiment, with some sort of anæsthetic, and possibly for a short time afterwards, but that it was protected from pain during the whole experiment, is more than the most sanguine can credit.*

But anyone can judge for himself as to the character of the experiments by opening the book at random. There is not a page, nor a paragraph, where some terrible mangle, dislocation, bruising, burning, or mutilation is not described.

In Experiment XVI., p. 31, on a fox-terrier, a curious side-light is thrown on the mode of using anæsthetics. It is stated that:

" At one time the anæsthesia was overlooked. The dog became profoundly under its influence, causing a very great fall in blood-pressure. . . . This fall was recovered in 40 seconds on removal of the ether. . . . "

* Dr. Crile states (p. 137) that "when sufficient assistance could be obtained, we supplied a special anæsthetiser." See Dr. Hoggan's evidence about anæsthetics, above, p. 31.

Thus we see that allowing the animal to be profoundly under an anæsthetic was regarded as an "*oversight*" ("the anæsthesia was overlooked"). After the removal of the ether, we hear that:

"Boiling water poured on the intestines caused a temporary rise."

In Experiment XVII., p. 31 (atropine, not an anæsthetic, had been injected into veins):

" Boiling water was poured into the abdominal cavity several loops of intestines were withdrawn from the cavity, and placed in boiling water, attended by a rapid rise of the blood-pressure, followed soon by a fall.

"Autopsy.—The scalded intestines were colourless. The loops that had been exposed to warm water extremely congested. The brain was much congested."

In Experiment XIV., p. 30, on a mongrel, we are told that—

" The hind feet in boiling water was attended by a rise in the pressure. . . . Crushing of hind limbs was attended with no effect. The respirations after the application of hot water in abdomen were good, but, while the experiment was protracted, they gradually and for a considerable length of time became deeper, and finally, after two hours of experiment, the respirations and the heart-beats still remained fairly good, and the animal was bled to death."

In Experiment XLV., pp. 41-42, it is recorded that—

" During the experiment, when the dog began struggling, the conjunctival reflexes did not respond After this part of the experiment was concluded, the dog was subjected to all kinds of operations for a period of three hours more. . . . Among the operations performed were double hip-joint amputation, amputation of the fore-legs, the application of a Murphy's button, and nephrectomy."

In Experiment XII., p. 29, it is stated that—

" Later and during further experiment no

amount of injury seemed to cause any change in the pressures after this low point had been reached”

Experiment CXXVI., p. 110 (2 hrs. 15 mins.):

“ Withdrawal of the intestines was followed by a slight rise. *Third.* Manipulation of the intestines; *Fourth.* Whipping the intestines; slight fall. Pressure in the portal and the inferior vena cava decreased during the whipping”

Experiment XXVIII., p. 35:

“ Smartly slapping the intestines with large scissors was attended by a rise of four millimetres in ten seconds. Rapid and continuous slapping was continued for one minute, when the blood-pressure was at the same height as it was before the slapping. Then, allowing the pressure to become steady, a repetition of the slapping with the handle of a scalpel was attended by a rise of eight millimetres in fifteen seconds.”

Experiment XXXVIII., p. 39:

“ Splanchnic vessels clamped; cardiac branch of stellate cut, and during the latter operation a vein of considerable size was torn, causing hemorrhage. Dog was weak before experiment was begun. *First:* Manipulating of omentum, *nil.* *Second:* Manipulation of intestines, *nil.* Dog gradually failed, respiration ceasing first.”

Experiment LV., pp. 45-6:

“ Cut through the floor of the mouth and exposed the pharynx. Contused and manipulated the epiglottis, upper surface of the pharynx, and rima glottidis. Extirpation of an eye and rude manipulating and bruising of the socket.”

One dog is described as:

“Very cross, had been nursing puppies.”
(p. 47).

Experiment LIV., p. 45:

“ Hunchback cur. Sciatic nerve exposed. Faradic stimulation. Intended to make further observations on the use of cocaine, but the

blood-pressure was so low, the dog showing so many signs of exhaustion that this was abandoned. *Third*: On removal of intestines there was a great fall. . . ."

Many other operations preceded the animal's death.

In one experiment:

"The animal apparently died twice," and was recalled to its misery by "vigorous artificial respiration" (p. 51).

Dilatation of the stomach is another favourite form of experiment (p. 52):

"Just after stimulation of the sciatic nerve severe injury and mutilation of the hind extremities were made" (pp. 53 and 54.)

Experiment LXXIX, p. 63:

" Incision in the lumbar region to expose kidney; manipulation of the kidney. After a few moments' interval the dog was shot with a '38-calibre Smith and Wesson revolver. The ball passed through the ninth rib, shattering it; through the diaphragm, two lobes of the liver, ascending colon, seven times through the small intestines, and made its exit from the left loin. A second shot was now fired into the dog, the effect of which was to produce an immediate cessation of respiration. After about thirty seconds a few spasmodic respiratory attempts were noted."

Experiment LXXXII., p. 68:

" Application of Bunsen's flame to the right hind foot caused an appreciable rise in the blood-pressure."

Experiment LXXXVII., p. 70:

" Injected curare and morphine into the jugular vein; artificial respiration maintained. Heart's action quite irregular while cutting the right fibres."

Experiment LXXXVIII., p. 71:

" Severe manipulation of the tongue, puncture, crushing, &c., produced no effect on the blood-pressure.

Puncture of the tongue was followed by a few deep irregular respirations. Artificial respiration was supplied at intervals, when breathing was bad. Faradic stimulation of the sciatic nerve produced a slight increase of the blood-pressure, and a fuller, slower pulse. The mercury manometer was not sensitive enough for recording the portal pressure."

Experiment XCIII., p. 74:

" Severe pinching of the gall-bladder was accompanied by marked fall in the blood-pressure and an irregularity in the respiratory action. The gall-bladder was manipulated roughly, producing altered respiratory rhythm and immediate fall in blood-pressure. Dilatation of the cystic duct with forceps produced no effect. The animal died of hemorrhage from accidental rupture of a large branch of the portal vein."

One dog, "in good condition," suddenly died while the tubing was being adjusted, doubtless of sheer terror.

Experiment CXXXIII., p. 118:

" Duration of experiment, two-and-a-half hours. Applied Bunsen's flame to the paw; the flame was applied to the foot as before; fall in blood-pressure followed. In the control experiments, as well as in this, the dog was not under full anæsthesia. In the former the animal struggled on application of the flame; after the injection of cocaine he did not. There was apparently blocking of the sensory impulses from the paw. Like experiments were made on the opposite paw, first as a control, and then by injecting cocaine into the sheaths of the sciatic and the anterior crural nerves."

On page 123 (Summary of experimental evidence), under the heading "Nerve-trunks," Dr. Crile says:

"ON CIRCULATION—Crushing, tearing, contusing, or cutting with dull instruments causes usually more or less rise in pressure."

And the practical result of these experiments?

Dr. Crile's last word is :

"The result of action is reaction ; of rest is restoration."

An admirably true saying, but one that is not entirely new to experience, even before dogs were shattered, and burnt, and torn, and manipulated till they died. All doubts regarding the truth of another ancient saying are also set at rest for ever by these enlightening experiments, viz., that "prevention is better than cure." On p. 155, Dr. Crile pronounces as follows:

" It will be seen how much more important is prevention than treatment."

And he adds :

"Prevention of shock may best be accomplished by taking into account all the known physiologic functions of every tissue and organ of the body in a way that would suggest itself to any practical surgeon" (p. 155).

We are also told (and here again Dr. Crile's pronouncements carry instant conviction):

"There is sufficient evidence to show that the shock produced is in direct proportion to the nerve-supply, and to the functional importance of the part injured" (p. 134).

What lives this knowledge will hereafter save!

In more than one instance, injuring an organ is recorded as causing " usually a rise, though occasionally a decline, in blood-pressure" (p. 134), a result a little disappointing from a practical point of view, though possibly, in its scientific aspect, it may be full of significance. To the ordinary mind, it would seem to throw considerable doubt upon the scientific value of the whole series of experiments ; the usual net result of a long and arduous course of vivisectional researches, as anyone who has any acquaintance with

the records could testify. This is why one set of experiments always inspires some ardent physiologist to embark upon a new series, with a view of disproving all the conclusions of his brother operator. What must be very gratifying to him, too, is that practically he always succeeds!

Dr. Crile says (p. 155) that:

"Surgical shock then is due mainly to a vasomotor impairment or break down. The cardiac and respiratory factors may be of considerable importance. However, the main effect is on the vasomotor mechanism."

One would certainly have expected that cardiac and respiratory factors, in a living organism, would always be of considerable importance, and for practical purposes one has generally acted on that assumption, even before Science came to assure us of the fact. One wonders if the practice of vivisection brings not only a blunting of the sentiments of pity and justice, but also an entire atrophy of the sense of the ridiculous. Certainly, under the most severe stimulus, these particular centres, in the majority of vivisectors, refuse to respond.

No one who has studied the writings of physiologists can possibly doubt that the practice is hardening and blunting to the sensibilities, or can regard without distress and foreboding, the mania that now prevails for vivisectional methods of all sorts, including those on which bacteriological research is founded.

If we believe that human welfare depends in any way upon human character, we cannot but look upon these methods as beyond measure evil and dangerous. Knowledge would indeed be dearly bought at the expense of character.

The cold ruthlessness which is absolutely essential to the prosecution of such researches, is an element in society peculiarly adverse to all that makes for social advance and welfare. Happily for our belief in the moral government of the universe, knowledge has *not* to be purchased, and cannot be purchased by atrocious deeds of cruelty against the most helpless of our fellow-creatures.

Professor Lawson Tait, M.D., F.R.C.S., LL.D., who died in the summer of 1899, leaves us his testimony on this point, in a letter published in the *Medical Press and Circular*, May 10th, 1899:—

“Some day I shall have a tombstone put over me and an inscription upon it. I only want one thing recorded on it, and that to the effect that ‘he laboured to divert his profession from the blundering which has resulted from the performance of experiments on the sub-human groups of animal life, in the hope that they would shed light on the aberrant physiology of the human groups.’ Such experiments never have succeeded, and never can; and they have, as in the cases of Koch, Pasteur, and Lister, not only hindered true progress, but they have covered our profession with ridicule.”

And this same year, we have had another remarkable pronouncement to the same effect from Dr. Wilson, M.D., LL.D., in his Presidential Address to the British Medical Association*:—

“I am prepared,” he said, “to contend that the indiscriminate maiming and slaughter of animal life with which these bacteriological methods of research and experimentation have been inseparably associated cannot be proved to have saved one single human life or lessened in any appreciable degree the load of human suffering. I have ventured to make that pronouncement before, but in halting

* *Lancet*, August 5th, 1899. The *British Medical Journal* in its full report of address omits Lord Lister's name.

academic fashion; I reiterate it here and now with the strongest and fullest conviction."

Previous to this declaration, delivered *ex cathedrâ* as it was, Dr. Wilson had emphasized what he had to say by speaking of his long studies of bacteriological literature, and his once expectant attitude towards the inoculating methods of treatment.

" . . . the more I have studied them the more firmly I feel convinced that they are based on errors and are the outcome of illogical inductions, every one of them."

He has not, as he said, allied himself with the anti-vivisectionists, but he does not for that reason speak the less forcibly.

" . . . I accuse my profession," he says, "of misleading the public as to the cruelties and horrors which are perpetrated on animal life. I have the highest respect for Lord Lister, and no one who knows him could accuse him of wilful misrepresentation, but when he stated, as he did in his speech at the opening of the bacteriological laboratory in Liverpool last year, that the actual pain involved in these experiments is commonly of the most trifling description, he was guilty of a *suppressio veri* of the most palpable kind, which could only be accounted for at the time by his ignorance of the actual facts."

In view of the facts and quotations given in this article, the following anecdote gains in painful significance.

(Whether this particular incident happened or not, I am not in a position to vouch personally, having no means of formally verifying it, but that it is true in possibility and probability, I am only too unhappily certain.)

A stray dog had followed a doctor to the door of one of our great hospitals, to most of which (as perhaps all do not know) a medical school is attached, wherein

vivisectional experiments are performed by licensed operators. On arriving on the steps of the hospital, the doctor pointed to the forlorn animal, and directed the porter to take him to Professor —, with his compliments.

If I have convinced—or rather, if my opponents, by their own pronouncements, have convinced the reader that vivisection is not the mild State-restricted affair that it is popularly supposed to be, then I must take it as a foregone conclusion that the reader has become, at the same time, an opponent of the practice.

To believe that anyone can truly know and *realise* what vivisection means, and still support it, is surely to place him low indeed in the scale of humanity.

That man should desire or permit that helpless creatures—his friends and dependents—should be put to slow torture, in order that he might be saved from the penalty of his own sin and folly, would prove our race too hopelessly base and contemptible to be worth the saving. The rapid extermination of such an irredeemable savage would be the one thing to be wished for.

More tremendous, if possible, than the baseness of such a bargain with the powers of darkness, is the folly of believing that we could ever get the best of it!

When did the trafficker with the devil get off without having finally to give up the soul that he had signed away, for the sake of a brief but enjoyable career?

The legend applies with singular aptness to the present situation, only that now the devil does not even keep his bargain honourably. He makes off with the luckless soul that he has blackened, but he does not

give that for which the bitter penalty has been incurred. Yet Heaven knows *our* part of the compact has been fulfilled! The tortures have been long and sharp, and many enough. But instead of thereby obtaining relief for the ills of life, we are blinded and baffled, and led astray in the paths of knowledge, as at last our medical misleaders are beginning to perceive.

Their attention has been withdrawn from natural and wholesome methods of cure, from the study of the laws of health, by obedience to which alone they can hope to gain any ground in the battle; and so the talent and labours of a large body of able men have not only been lost to suffering humanity, but have actually been devoted to the general injury, moral, and we may venture to say, even physical.

The last half century (during which this practice has so enormously increased), while bringing immense improvement in sanitary conditions and habits, has not released us from the tyranny of disease. On the contrary, *in spite* of our improved conditions, in spite of our consequently lessened mortality from all kinds of infectious diseases (such as small-pox, scarlet fever, &c.), the victims of cancer, consumption, liver and kidney troubles, in short, all the worst kinds of blood-disease, have in most cases nearly doubled in proportion to the population, and in some cases have more than doubled. The *sum total* of deaths from these causes, moreover, is greater than in the past, so the increase can scarcely be accounted for by supposing that the diagnosis of cases was imperfect in earlier days.

Vivisection, therefore, at least cannot claim to have given us the mastery of the worst forms of human

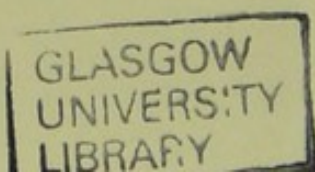
suffering. All the torture, all the cruelty, all the deadening of natural feeling and generous instincts which the practice involves, has *not* been rewarded by the extermination or diminishing of a single one of the ailments that figure on this black list. On the contrary, they have doubled. In striking contrast to these glaring facts, we find that typhus fever, and all the infectious diseases have steadily dwindled in prevalence and in severity, precisely in proportion to the improvements in cleanliness and sanitation for which the last fifty years have been remarkable. It is the more striking, that with all this advantage of improved conditions, these years of ardent vivisectional research should leave us in a worse plight than ever as regards blood-diseases.

To anyone who believes in the moral government of the universe, and in the reality of right and wrong, it surely cannot be surprising that man should thus fail in his attempt to increase his well-being by atrocious means.

The Black Art of to-day brings no more fruit of good than the older necromancy brought to its votaries in the dark ages ; and as the essential principle of both is the same—to achieve an object (possibly good) by evil means—we can look for nothing but disaster from our unholy traffic, so long as the laws of nature remain unchanged.

The harvest of cruelty is suffering and degeneration, and neither science, nor medical hierarchies, nor principalities, nor powers, can ever make it bear seed of health and progress.

MONA CAIRD.



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