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A Physiologist comes to Oxford
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It was in 1882 that the University elected its first professor of physiology. A new laboratory was to be part of the arrangement, and that project aroused a controversy which there is, just now, good reason to remember, but I do not intend to speak about the controversy here. Nor will I again mention Ruskin, who famously left Oxford because of it. My subject is Ruskin's opposite number, the incoming professor, John Scott Burdon Sanderson.

The new professor was not expressly the focus of the campaign against animal experimentation at Oxford, nor did he for his part have any natural inclination to pile into the fray, although he did speak during the debates in Convocation. Burdon Sanderson was not, after all, introducing this form of scientific research to the University. A little work of that sort had already been done in the University Museum under the Linacre professor, George Rolleston, whose brief had included physiology. There were also laboratories in Magdalen and Exeter, where dogs, rabbits, crayfish, frogs, worms and other animals were used. The studies at Exeter had recently been under the charge of E. Ray Lankester, a devoted polemicist whose claim that animal experimentation would and should increase geometrically was much more candid and more aggressive than anything the cautious Burdon Sanderson liked to say. And yet the University could hardly have chosen a more inflammatory name than Burdon Sanderson's to go with the new department, and really it was not money or buildings but his reputation that caused the greatest dismay. This was a man who stood in clear symbolic relation to the profession of research physiologist, so that, as the *Oxford University Herald* said, "The newly-appointed Waynflete Professor of Physiology may well be called the High Priest of Vivisection."<1>

What had first made Burdon Sanderson conspicuous outside the profession was his editorship of the *Handbook for the Physiological Laboratory*. This book, written by him and three others and published in 1873, set out for research students the techniques of their discipline and a large number of its basic demonstrative experiments. Its aim was to domesticate a sort of research which had hitherto been associated with France and Germany. (Nine tenths of the procedures described in the book originated abroad.) Burdon Sanderson himself had studied for a period in Paris under Claude Bernard, a ruthless seeker after knowledge whose pioneering work and publicity had given animal experimentation its new pre-eminence in medical research. In Arthur Conan Doyle's short story 'A Physiologist's Wife', Dr Ainslie Grey has a bust of Claude Bernard on his mantelpiece: no more needed to be said about the work being done in Grey's laboratory. Bernard was to be seen likewise on Burdon Sanderson's mantelpiece, and the *Handbook* was Bernardism come to Britain, not least in this respect: that nowhere in the work was it suggested that there might be any discipline of respect or pity for the animals caught up in this science.

The omission is not as straightforward and explicable as one might suppose. Burdon Sanderson was at that time director of a publicly funded laboratory, the Brown Institute, and he must have been aware that the politician whose remit included animal welfare, namely Vice-president of the Privy Council William Forster, felt very great concern about the proper treatment of animals in laboratories. This concern had certainly been made known to Sanderson's immediate superior at the Brown Institute, the Medical Officer to the Council, John Simon. Besides, Burdon Sanderson had himself taken some part in the formulating of four principles which were intended to act as a summary of physiological conscience, and which the British Association for the Advancement of Science had published in 1872. And then there was the man himself: John Simon said of him, "I do not anywhere know a kinder person than Dr Sanderson." It's true that Simon was speaking in defence of the profession at the time, but I do not therefore suppose that he was lying.<2>

Nothing of all this appears in the *Handbook*. There is no mention of the British Association principles, no suggestion that any authority outside the individual laboratory might have a view about how things should be done there. In particular, there is no general advice on the use of anaesthetic: sometimes it is mentioned, sometimes not. Its use as a means of preventing suffering is never referred to. Curare is often recommended in the *Handbook* for immobilizing an animal, but the then-undecided question as to whether it also relieves the animal of pain is not addressed: at least one experiment implies that there is no such effect. As to kindness, a lay person who reads Burdon Sanderson's nonchalantly professional narrative of the deaths of his dogs by suffocation – 'Asphyxia by complete Occlusion of the Trachea' – may well feel that there is on the contrary something of the "sub-man" here (the term is used by the historian John Vyvyan about Claude Bernard). And Burdon Sanderson is presenting the convulsions and death of "the dog" generically, because of course most of these experiments are provided as

standards, ones which "the student may be reasonably expected to perform for himself under due supervision".<3> He is, in short, setting an example.

Of course the *Handbook* was not intended for general reading: "we had not in view the criticisms of people who did not belong to our craft," as Burdon Sanderson put it later in characteristically unbending English.<4> Accordingly the authors disclosed their profession's mind and practice with an artlessness never possible again, which is partly what makes this moment in the story of scientific morality still so significant. At any rate, the book was indeed read by people not of the craft, and in a while became notorious. It was certainly an important factor in the government's decision in 1875 to set up a Royal Commission on the subject of vivisection, and during the Commission's hearings the *Handbook* was very frequently the theme of questions put to witnesses.

Burdon Sanderson's own answers were mostly bland and propitiatory – the professional reassuring the anxious layman. "I need not say that the amount of pain produced would be extremely small", he says, for instance, of procedure number 48, in which the heart of an unanaesthetised frog is laid bare. Asked about the experiments done by Delaroche and Berger (not featured in the *Handbook*) in which "animals were baked to death to see at what temperature they would die", he said that the experiments would "not be attended with much pain; because an animal, when subjected to a high temperature, very soon comes to a point at which pain ceases". When questioned as to where the dogs which he puts to use in the Brown Institute have come from, he cannot give an answer, but he assures the Commissioners that there is nothing unprofessional about the business: "They are always paid for at a proper price". In fact, for Burdon Sanderson professional honour was a keen preoccupation, not unreasonably for one whose profession was rather uncertainly related to the established and gentlemanly vocation of medicine, and was in itself very new. When the idea of legislation was put to him and to other witnesses by the Commissioners, it was as an insult to the profession that they felt and rejected it. Physiologists are "educated and responsible men", said Burdon Sanderson, and should be trusted accordingly. John Simon put the point more emphatically: "You are proposing that physiologists shall be treated as a dangerous class, that they shall be licensed and regulated like publicans and prostitutes".<5>

Throughout his evidence, as in the *Handbook*, Burdon Sanderson showed a very narrow conception of a physiologist's place in the world. He was a man seemingly without much imagination or philosophy. Conforming to his time, he deprecated emotion and regarded it as womanish: "It is because women by virtue of their organization are more liable than men to be handicapped by emotion that they will always fail in the race."<6> A key word in his vocabulary was "effectiveness"; emotion interfered with effectiveness. (As a man subject to phases of depression, he did have good reason to think that.) No doubt this is one way to become a professor, and Burdon Sanderson rose beyond even the Waynflete chair and in 1895 became Regius Professor of Medicine. His predecessors – in medicine Henry Acland (the former Regius Professor) and in physiology George Rolleston – had larger and more visionary minds. Acland had effectively appointed Burdon Sanderson in the first place, and he backed his man during the row over the laboratory, but he believed that experimental physiology implied much more than a new line of enquiry and an increase in knowledge. He saw in it "a great moral and intellectual question bearing on the very foundation of human society". Rolleston, who likewise – and with similar unease and reluctance – accepted vivisection in principle, had an unprofessional sense of its special risks and pathologies. All research, he frankly explained to the Commissioners, was "a gratification of self, and liable to develop selfishness, which of course is the root of all unscrupulousness". In the case of vivisection, mere selfishness might grow into something positive and vicious. He quoted for the Commissioners what Charles Kingsley had written in *Hypatia* about the effect upon the spectators of the violence and blood seen at Roman circuses: "then burst forth the sleeping devil in their hearts."<7> What must Burdon Sanderson have thought of this iconoclastic rhapsody? However, he soon had other troubles on his mind.

The most sensational evidence given to the Commissioners, and that which probably most influenced their final advice in favour of legislation, was that of a young researcher called Edward Emmanuel Klein. He had only recently come to England, having done his previous research at Professor Stricker's laboratory in Vienna. To the Commissioners, Klein's background seemed to give him special authority to testify to the moral character of this continental practice which the *Handbook* was now importing into Britain. Testify to it he candidly did, and he gave it a very shameful character. Asked about the use of anaesthetic, for instance, Klein said that in the case of dogs a physiologist would only use it "for convenience sake, in order not to be disturbed by the howling and the resistance"; in the case of cats likewise, "we chloroform a cat because we are afraid of being scratched"(p.183). In short, asked the Chairman of the Commissioners, Lord Cardwell, "you hold as entirely indifferent the sufferings of the animal which is subjected to your investigation?" Yes, said Klein.<8>

At least as shocking as the answers themselves was the fact that Klein was unaware of the bad impression they made, until enlightened on the subject afterwards by his colleagues (he subsequently tried to withdraw his evidence). In fact he thought himself to be speaking for the profession in these matters, as his use of the first person plural shows. He was, besides, a man who was teaching students from the hospitals, students who, so he believed, shared his point of view or would acquire it under his tutelage; he was picturing, then, the future as well as the present of life and death in the laboratory. Probably Klein was trying in his own way to assert the dignity of his profession. It was the habit of physiologists abroad to speak of rising above conventional sentiment in the laboratory as one might speak of rising above fear in more traditionally heroic scenes. But this would hardly have impressed the British Commissioners, and Klein was not the man to carry it off anyway.

Now Klein was one of the authors in Burdon Sanderson's *Handbook*. Most of his work was done at the Brown Institute, where his official position was that of assistant to Burdon Sanderson. It must have been a further embarrassment to Burdon Sanderson that Klein had only a very confused recollection of William Forster's recent instructions on animal welfare (by this time, they had taken the form of a written minute). Klein did concede, as far as he could deduce it from some brief conversations, that his director at the Brown Institute was less absolute than himself on the subject of animal suffering. But this hardly exculpated Burdon Sanderson, who ought for his part to have known Klein's views and corrected them. Almost certainly he did know them, but thought the matter unimportant. Burdon Sanderson was giving evidence to the Commissioners alongside his fellow-physiologist Michael Foster of Trinity College, Cambridge, at the time when Foster was asked whether among teachers and students there was "the utmost tenderness in dealing with animals": "As far as I know," said Foster. "You thoroughly believe that?" Lord Cardwell insisted. "As far as I know," said Foster again.<9> Sometimes it may be hard to distinguish a very proper scientific scepticism from mere slipperiness. Burdon Sanderson did not intervene.

This had all happened some time before Burdon Sanderson came to Oxford, but the *Handbook* was not in the least forgotten, nor was the Report of the Royal Commission. Both were enlisted in the campaign against the new laboratory. Besides, Burdon Sanderson had continued to identify himself closely with the rise of his profession. In 1876, the year of the Commission's Report and of the Cruelty to Animals Act which was its consequence, he founded the Physiological Society, which in the years afterwards promoted the profession's point of view in every way possible, notably in its sponsorship of a pro-vivisection resolution at the triumphalist International Medical Congress of 1881. He was on the council of the much more ambitious organisation founded in 1882, the Association for the Advancement of Medical Research. In that same year the AAMR quietly but quite officially made itself a party to the administration of the 1876 Act (up to that date surprisingly vigilant) and then very quickly nullified it as a means of controlling vivisection in the interests of the nation's ethics and of its animals.<10> This subversion of the Act was known about and commented on in Oxford.

Thus prominent in the short history of his profession, Burdon Sanderson arrived at the University. Just at the same time, the new Wilkie Collins novel *Heart and Science* was being serialized in *Belgravia* magazine. Events since 1876 had done nothing to dissipate that "feeling of suspicion, and even of abhorrence" which the Commissioners had noted "among a large and very estimable portion of the public, against those who are devoted to the improvement of medicine and to the advancement of science".<11> Contemporary fiction largely reflected this feeling, and Collins's villain is a vivisector some way on in the Rolleston pathology – the frightening pervert Dr Benjulia. Nobody could have identified that lurid figure with Burdon Sanderson, though it can hardly have improved his welcome, but when Conan Doyle's story 'A Physiologist's Wife' appeared a few years later, a better likeness became available. The point of this story – hinted at in the title, which in the climate of the time was surely intended and read as a sinister oxymoron – is that the dour and ambitious hero, "the very type and embodiment of all that was best in modern science", is pitifully unschooled in his own humanity, and therefore still emotionally a child among grown-ups.<12> It turns out in fact that he has no wife. Burdon Sanderson, however, did have a wife and by all accounts a happy marriage. For a portrait of the man himself, you should go to the north-west corner of the University Museum's central court. There is Burdon Sanderson, a gaunt, anxious face, with a sceptical set to the lips, the person seeming a little small for its robes. Two busts further east is a portrait by the same sculptor of George Rolleston. This is a romantic piece – the scientist as hero – but then there were indeed heroic elements in Rolleston's life and character. That cannot well be said of Burdon Sanderson. Certainly he saw medicine as a heroic endeavour, and he did what he thought his best to serve it at that crucial time of change not just in British medicine but in British culture as a whole. I only wish that he had been a greater man and had served them both much better.

<1>October 27th, 1883

<2>Royal Commission on the Practice of Subjecting Animals to Experiments for Scientific Purposes, 1876, Evidence, p.75

<3>Klein, Burdon Sanderson, Foster, and Brunton, Handbook for the Physiological Laboratory, ed. Burdon Sanderson, 1873, pp.396, 319-29, 341. John Vyvyan, In Pity and in Anger, 1969, p.43

<4>Evidence, p.118

<5>Evidence, pp.237, 146, 148, 122, 75

<6>Sir John Burdon Sanderson, a Memoir, by the late Lady Burdon Sanderson, Oxford, 1911, p.157

<7>Evidence, pp.47, 63, 64

<8>Evidence, pp.183, 186

<9>Evidence, p.124

<10>Statement of Home Secretary Harcourt to the House, Hansard, April 4th, 1883. This development and other aspects of the national controversy of the period are recounted in R. D. French, Antivivisection and Medical Science in Victorian Society, 1975, which remains the standard history.

<11>Report of the Royal Commission, p.xvii

<12>First published in 1890, here quoted from Tales of Adventure and Medical Life, 1978, p.98. Conan Doyle did support vivisection in principle.