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BEASTS OF BURDEN: ANIMALS AND LABORATORY RESEARCH IN COLONIAL INDIA

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From the late nineteenth century, colonial India experienced a sustained institutionalization of bacteriology. Several laboratories were established starting with the Imperial Bacteriological Laboratory at Poona (1890); the Bacteriological Laboratory at Agra (1892); the Plague Research Laboratory in Bombay (1896); the Pasteur Institutes of India at Kasauli (1900), Coonoor (1907), Rangoon (1916), Shillong (1917) and Calcutta (1924); and the Central Research Institute (CRI) established at Kasauli in 1905. With the setting up of these institutes, issues of laboratory research and ethics assumed critical dimensions in India. The institutes needed and used massive animal resources. To give one example, the production of a single (Semple) vaccine in one Pasteur institute required six thousand rabbits annually.1 This paper seeks to situate animal experimentation in Indian laboratories within the social history of colonialism.

How did science harness its beasts of burden in the Empire? The paper argues that animal experimentation in Indian laboratories needs to be seen within a context in which Indian animals became subjects and resources of the British Empire. The process was a complex one, since debates about animal experimentation in Indian laboratories were shaped both by late Victorian moralities and by Hindu animal sensibilities growing around the contemporary Cow Protection movement. British attitudes towards the local animal population in India reflected their attitudes to the local human population; a mixture of romanticism and authoritarianism. Animal experimentation was legitimized and legalized in colonial India through processes by which the British assumed moral and political agency, by designating Indians as cruel and childlike. No animal experiment legislation was ever introduced in British India, despite a strong movement in favour of it. More importantly, the anti-vivisection movement died out in twentieth-century India almost as rapidly as it had arisen, although sentiments towards animals remained strong and politically volatile. Science, particularly bacteriology, came to the colony in the guise of a positive moral force. This secured immunity from alternative moral critiques of its methods, and as a result a potentially explosive circumstance was mitigated through a moral and political resolution. The issue was not just about the establishment of the Pasteurian method in the colony, but about developing colonial research institutions as establishments of cure and consensus. This reflected not just the genesis of a particular research institution or tradition, but the consensual and simultaneous building of a society, its morality and its scientific tradition.

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ANIMALS AND EXPERIMENTS IN COLONIAL INDIA

The conflicts between the needs of science and animal rights have been issues fraught with debates, conflicts and moral crises. In the late nineteenth century, public awareness about animal experimentation had reached a peak both in Britain and the USA. In England particularly, animal experimentation became a volatile issue at the time of the rise of laboratory medicine and the vaccine researches of Louis Pasteur. There was a strong and vociferous anti-vivisection movement, committed to the protection of laboratory animals.2 In 1876 legislation was passed in England severely restricting animal experimentation.3 To these groups Pasteur and his institutes represented unthinkable cruelty towards animals, so much so that British scientists failed to establish a Pasteur Institute in Britain and settled instead for a rather innocuously named British Institute of Preventive Medicine, in 1893.

One way of explaining these sentiments is to see these as reactions towards the transformation of the animal body into a scientific object.4 Pasteur's method of producing vaccines by attenuating the virus, by passing it through a series of animals, turned animals more directly into productive resources for science, rather than just objects of experiments. His experiments required an 'industrial' manufacturing scheme involving animals.5 However, it is important to go beyond the animal body and the laboratory space to locate this process within the wider transformation of animals into resources, of the modern state, of science and of modernity in general, a process that was particularly evident in the colonies. It is necessary to see Pasteur as not in isolation from the general processes at play in the society within which his work was located. This relatively narrow focus towards Pasteur and modern society is evident in Bruno Latour's *Pasteurization of France*, despite its critique of sociological reductionism and attempts at exploring social expansiveness by studying both human and non-human actors.6 Latour challenges the god-like agency that is claimed by Pasteur in his experiments in attenuation of germs, commonly known as Pasteurization. He points out that through this, Pasteur appeared stronger than the bacillus as well as the farmers, who were then subjected to his method. In this undertaking Latour shows that there was no difference between the laboratory and the real world; for when Pasteur's vaccine proved effective in treating anthrax, then the real world had become his laboratory. To challenge this, Latour adopted an egalitarian approach and assumed a sense of commune of various factors that inform the construction of scientific fact: "Hygienists, biologists, surgeons, sanitary engineers, veterinary surgeons, physiologists … as well as tuberculosis, cholera, diphtheria, tetanus, yellow fever, rabies, and the plague, all move according to different paths…."7 But such radical egalitarianism reflects analytical flatness and lacks an appreciation of equations of power.8 Latour fails to problematize agency within wider social history. The history of science and its subjects — animals, women, prisoners, soldiers, etc. — has to be studied as a social and political process of gain and loss of agency in modern society. As this article will suggest, animal experimentation was legitimized in colonial India through complex slippages of agency within colonial society.

The intricate social history of Pasteur and his experimental subjects is evident in the diverse nature of the opposition to Pasteur in Europe. His opponents were an eclectic group of humanitarians, anti-vaccinationists and liberals who opposed industrialism, vaccination, harsh incarcerations, cruelty towards women, children and animals, as well as colonialism,

and so forth.9 Historians have highlighted how reactions to Pasteur took place within an important modern dilemma in the West: in seeing animals both as resources for human consumption as well as recipients of human compassion. According to James Turner, the dual shocks of industrialization and urbanization helped to produce a deeper emotional identification with the natural world, particularly animals.10 On the one hand, romanticism and sentimentalities towards animals have grown; on the other, increased demand for food has given rise to industrial levels of meat production, along with the growing popularity of hunting and fishing sports.11 It is necessary to understand animal experimentation in colonial Indian within this broad problematic.

Animals were an important part of colonialism, and imperialism added an important complexity to the modern problematic of human–animal relationships. It brought about unprecedented management of resources and the movement of goods, the building of rail and road networks and carrying of supplies for armies. Three trends were initiated by the colonial state in India in its relationship with animals. First, colonialism created new urgency in the clearing of forests and destruction of vermin, for the expansion of capitalist agriculture (Figure 1) and the increase of revenue.12 It also opened new arenas for engaging in animal sports. Paradoxically, at the same time imperialism also led to romanticism towards Oriental flora and fauna and the adoption of new moral values towards animal welfare, which were prompted by colonial relationships of empathy and antipathy between humans and animals as masters, subjects and resources. This also took place within a political context in which animals figured centrally in the Cow Protection movement and a growing political sensitivity towards animal issues in India. The adoption of animals for scientific research was therefore a volatile issue in the colonies as well.

However, little attention has been given to such issues with regard to animals and the colonies. Animals have been studied in the context of colonial historiography only with respect to hunting, conservationism and veterinary science.13 Links between animals and scientific research have not been explored. On the other hand, historians of colonial India have studied how the human body became a subject of science and the colonial state. The colonized body was used as an object of scientific experimentation, as well as the metaphorical object of the assertions of governmentality by the colonial state through modern scientific principles. David Arnold has seen the human body as a site of colonizing power as expressed by Western medicine.14 James Mills shows how the human body had been central to colonial therapeutic regimes, in order to transform the inmates of asylums into “docile, obedient and efficient Indians”.15 The theme of physical violence as a means of colonial governance has been explored by E. M. Collingham. Practices like the whipping of criminals were rationalized by the paternalistic attitudes of the British towards its unruly and ‘immature’ Indian subjects.16 Others have highlighted the configuring of the colonial body in terms of crime and criminality.17 These studies carry important suggestions for the issue of animals as well, which also involved a similar dualism of paternalism and violence by the colonial state which this paper visits. However, the issue of animals and scientific experiments in the colonies needs to be situated within the distinct context of colonialism, science and resources.

Animal experimentation in colonial India did not begin with bacteriology. From the 1860s, as the British attempted to introduce various chemical drugs in colonial India, experiments on animals became necessary. In the 1880s a debate broke out between *The lancet* and a number of medical men based in India about the use of chloroform as an anaesthetic. *The lancet*'s position was that chloroform was not safe as it paralysed the heart (leading to syncope) and therefore the use of ether was to be preferred. However, medical men from Edinburgh trained under James Syme and James Young Simpson argued that chloroform was in fact safer.18 Syme's student Edward Lawrie, who was the resident physician of the Princely State19 of Hyderabad in India, believed that chloroform affected respiration (leading to asphyxia) not the heart, so if the patient was made to breathe it carefully it was a safe and effective anaesthetic. The debate led to the formation of two Hyderabad Chloroform Commissions. At the first Commission of 1888, Lawrie experimented on 141 animals and reported to the Government of India, "I have killed scores of dogs with chloroform … and I have never seen syncope or failure of the heart's action produced by it". 20 The first Commission, however, proved indecisive. *The lancet* dismissed the report as being no more than "scanty statements of experiments" and demanded more proof, since the findings were contrary to those of the commission appointed by the Royal Medical and Chirurgical Society and by the British Medical Association.21 This led to large-scale animal experimentation in the second Commission. The Nizam (ruler) of Hyderabad offered £1000 to *The lancet* to send experts to observe the experiments in Hyderabad.22 In October 1889, Lauder Brunton came to Hyderabad as the Nizam's guest.23 Experiments started on 23 October and continued every day till 18 December.24 Several animals were used and *The lancet* published Brunton's telegram from Hyderabad: "Results most instructive. Danger from chloroform is asphyxia or overdose; none whatsoever heart…."25 In 56 days around five hundred animals were killed and clinical studies were conducted on 54 humans.26 Brunton was certainly impressed by the scale; as he later commented, "the amount of experimental work we did in three months was so great that it would really have taken a man his whole time for three years to work out all that was shown by the tracings".27 The animals were subjected to painful experiments. The report described that experiments to test effectiveness of anaesthetics had to be painful for animals, as they involved tests such as "… extractions of teeth, evulsion of nails, section of the muscles of the eye, snipping of the skin of the anus, &c. In many cases the operation was performed when the animal was merely stupefied by the chloroform and not fully insensible".28 *The lancet* now appreciated the scale of the operation and reported, "The Experiments of the Second Hyderabad Commission have supplied us with a mass of experimental data such as never been obtained before, and is not likely to be obtained again, at least for many years …".29

Such an experimental and statistical triumph was not uncommon in colonial research, particularly since large-scale animal experimentation could be undertaken there by British scientists. Following the passing of the 1876 Act in England, British medical men used animals, mostly stray dogs, for large-scale scientific experiments in India. To give one instance, experiments on snake venom, started by Joseph Fayrer in India, were hampered when he returned to England due to the limited scope of animal experimentation there.30 Vincent Richards resumed this research when he came to India.31 Leonard Rogers arrived in India in 1893 and restarted Fayrer's research as he could conduct animal experiments

there more freely.32 In another instance, in 1872 the Indian Snake Venom Commission, in order to verify the length of time those bitten by snakes could be kept alive by artificial respiration, conducted experiments very similar to those of the Chloroform Commission on two hundred dogs, which were either forcibly bitten by cobras in captivity or hypodermically injected with the venom.33

These experiments coexisted with another aspect of colonialism: the moral ascendancy and paternalism that the British claimed in India. As harbingers of both modernity and morality in colonial India, the British represented both ends of the developments around science and animals of contemporary Europe; they were both the experimenter on as well as the carer for animals. Imperial attitudes towards animals contained strong elements of care, empathy and romanticism, which added a moral and paternal tone to the issue of animals and colonialism.

ANIMALS AND EMPATHY IN THE EMPIRE

Along with adopting animals as subjects of science, British residents in India had expressed strong compassion for Indian animals. The British residents and the colonial government cared for and adopted the wretched draught and street animals of India with the same utilitarian ethic that they empathized with the poor and downtrodden Indians. In Curzon's words, the Raj stood for "the Indian poor, the Indian peasant, the patient, humble, silent millions".34 In 1861, Colesworthy Grant (1813–80), a British painter and resident of Calcutta, established the first Indian Society for the Prevention of Cruelty against Animals (SPCA).35 This in fact preceded similar developments in the United States, where Henry Bergh organized the first American Society for the Prevention of Cruelty to Animals in New York City in 1866.36 Grant's main concern was the suffering of street and draught animals he encountered in his everyday life in Calcutta. In his morning walks he noticed "the hideous wounds, galls, dislocations, and mutilations" that cattle and horses were often subjected to by their keepers.37 The Calcutta SPCA focused on ameliorating the conditions of these "labouring and domestic animals".38

An example of this imperial empathy towards Indian animals was in the European adoption of the word 'pariah' for the Indian mongrel dogs. Pariah originally referred to a low caste community of South India, and it was used by the British to describe the mongrel street dogs of India, which were a similar 'outcastes'. To the British they were grim reminders of the realities of Indian society. The exploration of imperial attitudes towards native dogs allows us to understand the complexity of imperial policies towards animals and, as R. J. Gordon has pointed out, the social history of colonialism itself.39 Throughout the nineteenth century, dogs were as much objects of pity as they were symbols of class and elitism; while mongrels received compassion they were also feared and subjected to harsh treatments by Europeans. They also reflected colonial racial relationships. While empathizing with the local pariahs, the British brought with them to India their own breeds such as fox-hounds for hunting sports. The British subalterns, privates and civilians brought bull-dogs, mastiffs and terriers. Spaniels, retrievers and greyhounds were brought for sports and many English ladies carried with them Maltese, Dandie Dinmonts and dachshunds.40 Pariah dogs were also hunted by the British.41 One ex-cavalry man wrote: "Our dogs had a great dislike to the native dog or *pariah*, as he is called, forgetting that they had a deep strain of the pariah in

their own breeding. Anyhow, the barrack dogs — that is to say, those mongrels of European origin — seem to glory in a good pariah dog hunt; and in this respect, we their masters, joined suit."42 British soldiers often went to hunt with their own dogs and attacked those belonging to the local villagers.43

By the late 1880s, with the growing popularity of Pasteur's anti-rabies treatment, there was an almost frantic discussion in India about pariahs and hydrophobia. Regular complaints about the "menace" caused by "multitudes of dogs" that infested the cities were being reported.44 The *Indian medical gazette* commented in 1892 that "Something like a public panic prevails" in Bombay against dog bites.45 The *Pioneer mail* wrote half-sympathetically, "The poor pariah is in worse repute than ever just now, when hydrophobia and Pasteur Institutes are such prominent topics".46 There was a dilemma about the methods to be adopted for the extermination of street dogs. Poisoning often killed "valuable" dogs owned by the Europeans, and clubbing them to death by municipality sweepers, although the most common practice, was abhorred.47 A "Lover of Animals" complained about the "brutal manner in which dogs are destroyed, beaten and stoned to death by natives, who have no thought but to gain the tax levied on the destruction of the poor creatures".48 More humane dog vans were later designed by the SPCAs.

This complexity of imperial attitudes towards indigenous animals informed scientific researches. At a time when dogs were becoming subjects and symbols of animal empathy in Britain, they were becoming the prime objects of scientific experiments in India. Researchers preferred pariah dogs as they were abundant in Indian streets. In 1909, in a letter to the India Office, Lauder Brunton pointed out that for experiments in India, pariah dogs were ideal as they were "much commoner and less expensive".49 It is within this context that imperial legislation for Indian animals has to be located.

IMPERIAL LEGISLATION AND CRUELTY TOWARDS ANIMALS

The most important intervention of the Indian SPCAs was in the introduction of the Cruelty against Animals legislation. The Calcutta SPCA had urged the Bengal government to pass the first Act for the Prevention of Cruelty to Animals for Bengal in 1869.50 A similar Act was passed in Ceylon in 1862.51 Prior to these, two general laws were passed in 1861 in Calcutta to protect the street animals.52 The 1869 Act was extended to all of India in 1890–91, a time when the Pasteur movement was also gaining momentum.53 However, it was restricted to draft and sport animals used by Indians and did not refer to the use of animals in research or those used in British sports.

The Indian Cruelty Acts were not simple extensions of contemporary British legislation or concern regarding animals to India. They were also reflections of British perceptions of Indian character and society. As some scholars have argued, the British engagement with cruelty in India or in Indian character was to a large extent a post-1857 development.54 The Revolt led to a public outpouring of rage and fear among the British at the supposed atrocities and cruelties committed by the Indian sepoys. Patrick Brantlinger has shown how the "Well at Cawnpore" drove public opinion in Britain, leading to a polarization between good and evil, innocence and guilt, justice and injustice, civilization and barbarism.55 The

distrust was particularly towards the uneducated Indian masses, who comprised the mutinous and supposedly cruel sepoys, thereby rejecting the benefits and benevolence of English rule. Colesworthy Grant, the founder of the Calcutta SPCA, wrote at the time of the Revolt in the *Durham advertiser*, explaining to the British public that the origin of the "Mutiny" was in fact in the "character of the mass of people in this country": "The uneducated Asiatic is characterized by two extremes, — that of simplicity and childishness in his ordinary and better moments, … and in his excited and worse mood, by that cunning, treachery, and cruelty (to a degree, alas! we did not know till now)…."56 This idea of the cruel and yet childlike Indian shaped the paternalism of colonial legislation.

The Cruelty Acts in India were marked by a conflicted relationship of romanticism and authoritarianism with which the British had approached the issue of saving wretched Indian animals. The Acts were essentially directed to check native cruel practices. To that extent, they were not just about cruelty towards animals, but also about introducing a legal and rational paradigm within the perceived irrationality of the human–animal relationship in Indian society. The Acts were passed at a time of British attempts at inserting a legal and rational paradigm within Indian society by the enactment of the Indian Penal Code in 1862. The entire codification process represented the transplantation of English law to India, complete with lawyers and judges.57 This mix of romanticism and authoritarianism in the British attitude towards Indians and their animals is reflected in the work of John Lockwood Kipling,58 who as a British artist and resident in India was in these respects a successor of Grant. He wrote the *Beast and man in India* just after the Act of 1890 was passed. He addressed readers in Britain who had wondered why such an Act was necessary in India. Kipling suggested that a study of domesticated Indian animals, towards whom the 1890 Act was directed, provided a unique insight into Indian society itself: "… an elementary study of Indian animals, their treatment and usage, and the popular estimates and sayings current about them … opens a side door into Indian life, thought, and character, the threshold of which is still unworn."59

According to him, at the heart of the human–animal relationship in Indian society was ignorance and irrationality, characteristic of the Oriental intellect: "First-hand observation and accurate statement of fact seem almost impossible to the Oriental, and education has not hitherto availed to help him."60 The ignorant and irrational Indian also enjoyed a strange proximity to their animals: the "Indian cultivator is very much like his ox. He is patient, and bears all that drought, flood, storm, and murrain can do with the same equanimity which the ox bears blows, when the oxen chew the cud and their masters take their nooning, the jaws of man and beast move in exactly the same manner…. Like the peasant, too, the ox is indifferent and devoid of curiosity".61 His book catalogued the "curious intimacy with animals that exists in India among those who have charge of them".62 He reproduced the assortment of humans and animals in Islamic and Hindu iconography, described the proximity of *Mahouts* with their elephants and the bed-sharing of hunting cheetahs with their trainers, and also narrated the most famous instance of such closeness: the wolf-boy of Lucknow, chronicled as Mowgli by his son Rudyard Kipling in the *Jungle book*, whose pictures he painted.63 In Kipling's view, Indian intimacy with animals did not make them their masters. The man who trained his cheetah to hunt for him was not a trainer as the "the

creature … is merely let loose to perform an act he learned in a wild state…".64 An inept master could also be a cruel master who controlled his animals only through "starvation and the stick".65 He contrasted this with animals trained by the British; the fetch-and-carry tricks of an English spaniel or retriever were looked at "with astonishment" in India and "you are listened to with polite incredulity" when the acts of a collie with sheep were described.66 Kipling concluded, "No, the Oriental is not a firstrate [*sic*] animal trainer. With almost boundless patience, he has no steadfastness of aim, nor has he sufficient firmness of hand and will to secure confidence and obedience".67 This is where the imperial legislation secured its moral legitimacy. The Cruelty Acts came to be driven by the same utilitarian urge of the Raj to promote firm and impartial rule of law in India.68

This empathy towards Indian animals developed in parallel with the activities of the antivivisectionists and the Royal Society for the Prevention of Cruelty to Animals (RSPCA) in Britain. What is distinctive in the imperial context is that this notion of care for animals was concomitant with the notion of rule. The rationale of empathy as promoted by the British residents was ultimately a rationale of the 'benevolent' colonial state, unlike in Europe where it developed as a movement often directed against the institutions of the state. The Indian Act of 1890 was therefore celebrated as a great symbol of the moral and civilizing acts of British rule in India.69 It became a model to be applied to other British colonies like Zanzibar.70 Viceroy Lord Elgin (Victor Alexander Bruce, 1849–1917), in his speech to the annual meeting of the Calcutta SPCA in 1893, commended the 1890 Act for its strong Utilitarian ethics.

> I am furthering a movement which has the goodwill of all who are not thoughtless and indifferent, and who believe that a share of the compassion and sympathy which we feel for our fellow human creatures is also due to those other fellow-creatures whom we regard as occupying a lower position than ourselves in the animal kingdom….71

This concern for animal welfare also reflected the expansion of the moral universe of twentieth-century bourgeois politics. Modern politics represented animals both as metaphors as well as recipients of its notion of care and empathy. It was within this moral horizon that Indian Hindu politics too had adopted animals within its own moral, cultural and social universe and identity. This created another dimension in the Indian engagement with Pasteur and scientific experimentation.

PASTEUR IN INDIA: ANIMALS IN POLITICS

Animals figured in mainstream Indian politics much more significantly than they had done in Europe. In the late nineteenth century there was an escalation of the Cow Protection movement in north India. The Arya Samaj adopted the cow both as a symbol of Hindu compassion towards other life forms and as an icon of the unification of the Hindu community, as a response to colonial rule and in order to modernize Hinduism. The movement was directed against the British and the Muslims, both being depicted as 'outsiders' to the Hindu identity and morality as well as brutal because they consumed beef. Subsequently, Hindu–Muslim conflicts over cow slaughter escalated especially in North

India. Riots took place in the United Provinces, Bombay, Rangoon and also in the princely states.72

This movement increased the activities of the traditional animal sanctuaries called the *pinjrapoles*, maintained essentially by Hindus. These groups also created moral and institutional links with the animal protection movement sponsored by the Indian SPCAs, leading to a growth of these animal shelters. One of the consequences of the Cruelty Act of 1890 was that it increased the demand for animal shelters for rescued animals.73 The Madras *pinjrapole*, for instance, was founded by local traders in 1908 who responded to a plea from the Madras SPCA.74 There was also moral empathy between the two movements. Isabel Burton (1831–96), a prominent animal lover and antivivisectionist of London, wrote about her experience of a visit to a *pinjrapole* in India:

> I should think it far better to put a bullet through their heads; but I admire a religion that believes in animals having a kind of soul, and future, and that prompts their having a refuge where, at least, no one can hurt them, and where they get some kind of food, drink, and shelter.75

Both the cow protectionists and the SPCAs were faced with the prospect of large-scale animal experimentation in India, which united them against a common enemy. In the 1890s British residents in India launched a movement to establish Pasteur institutes and bacteriological laboratories in India for the treatment of rabies and other diseases. This in turn provoked opposition in England. The Antivivisectionist Society of Britain sent petitions to the Government of India and the Secretary of State for India against the proposals. They sought to use contemporary Hindu sentiments for animals to promote their cause. In 1892, Frances Cobbe wrote to the *Pioneer mail* of Allahabad: “I most earnestly hope that neither my brave countrymen in India (where my father fought at Assaye), nor yet native gentlemen … will be *bamboozled* … to give their money, or to countenance in any way the proposal to erect a Pasteur Institute in our Queen’s dominions.”76 Benjamin Bryan, another activist, wrote to Indian newspapers about cases in Paris where patients had died of the “poison” of Pasteur, from “intentional inoculation with M. Pasteur’s ‘laboratory rabies’”.77 Antivivisectionists from Victoria Street wrote to Indian dailies urging them to summon Hindu kindness and tolerance towards animals and reject Pasteur’s methods. Some nationalist newspapers interpreted this in terms of a distinction between the materialist West and the spiritual East: “The Western world of thought has not been, however, yet influenced to any appreciable degree by the sublime teaching of Buddha to refrain from doing conscious injury to God’s less favoured creatures. Science with her seductive tongue, has been blinding the moral eye-sight of the materialistic West.”78 Early protests sent by Indians to the Government of India against the establishment of a Pasteur Institute blended British antivivisectionist and Hindu, particularly Jain, religious sentiments. Gulal Chand, Secretary of the Antivivisection Society of Calcutta, wrote to the government about “the disastrous failures which have constantly attended the Pasteur Institute at Paris and in England, and the most horrible cruelty involved therein of the painful experiments and the cultivation of rabbies [*sic*] and inoculation is so much shocking to the hearts specially of the Jains who as well form a part of Her Majesty’s most loyal and peaceful subjects”.79

Such convergences of British and Hindu sentiments around animals had their limitations. The supporters of *pinjrapole* and the Cow Protection movements had little sympathy for the antivivisectionist cause. To begin with, they had distinct religious motivations. The antivivisectionist movement was driven by the late Victorian Christian revulsion against vivisection and Darwinian evolutionary science.80 The RSPCA in England had declared itself to be "conducted exclusively on Christian principles".81 Even in the Indian SPCAs, the local clergy were its most active members. Colesworthy Grant, a devout Christian, had established and run the Calcutta SPCA, as he put it, by God's call to him "as a Christian". He added: "… my work in connection with the Society for the Prevention of Cruelty to Animals is my work for Him — I feel called by God to do it.…"82 The Cow Protection movement, on the other hand, was a particular expression of Hindu nationalism. To the Hindus, the threat was perceived as not from modern science, but from the Muslims and the British and their cultural practices. The cow became an exclusive political icon in such a Hindu movement and by the early twentieth century the *pinjrapoles* changed their character to become shelters almost exclusively for cows.83

The main contrast, however, was in the different attitudes towards Pasteur in Britain and in colonial India. The Indian Pasteur movement, led by British residents and Indian élites, had much greater social legitimacy in India than in England. Modern experimental science was absorbed within Indian nationalism as a progressive and modernist movement. Most of the native newspapers in India, which were sensitive about cow-protection, supported the establishment of the Pasteur Institutes, the emblematic target of antivivisection protest in the West. Marwari and Jain businessmen were members of and made financial contributions to the Pasteur Committees, many of whom would otherwise have been sympathetic to the Cow Protection movement.84 Many of the Indian Princes who were enthusiastic about modern science banned cow slaughter in their own principalities.85 The few antivivisectionist groups that were established in India in the 1890s soon disappeared, due to the lack of any real political or social motive.

The identification of scientific research with moral and material progress in colonial India was particularly evident in the case of the Hyderabad Chloroform Commission with which we started the discussion. Hyderabad was one of the Princely States in British India, which were domains of indirect rule under British Paramountcy by princely rulers. Often caricatured either as pawns of the British or as indolent Oriental despots, these rulers were placed in a peculiar status of sovereignty and legitimacy within the British Empire.86 One of the ways in which they could retain a vestige of their authority and sovereignty was by adopting 'progressive' modes of administration and by demonstrating their loyalty to the Empire.87 Throughout the period leading up to the Chloroform Commissions, the Nizam Mahbub Ali Khan and his then Prime Minister, Salar Jung, were involved in a difficult relationship of conflict with the British Paramountcy over the Berar territories.88 In 1885, a few years before the establishment of the Commission, the Nizam had offered to send troops to aid the British government in Egypt and in the Afghan frontier. In 1887, Queen Victoria's Golden Jubilee year, he sent a letter to the Viceroy of India offering twenty lakhs of rupees annually from the State of Hyderabad to the Imperial Government for three years, for the exclusive purpose of Indian frontier defence.89 Following the experiments of the

Commissions, the Nizam was celebrated as a great patron of science in the Anglo-Indian press.90 Edward Lawrie expressed his gratitude towards the Nizam "for the opportunity of scientific progress which his unbound liberality has afforded …".91 The Hyderabad Commissions have been described as a glorious chapter in modern Indian history of experimental science.92 The Commission's centenary was celebrated in 1989 in Hyderabad.

In such circumstances, even movements that in Britain were radically antiscience assumed very different characteristics when transposed to an Indian social and political context. For example, the Humanitarian League, a London-based radical socialist group opposed to vivisection, compulsory vaccination, ill-treatment or killing of animals and free trade, while opening its branches in India in 1905, sought to establish antivivisection as its main area of focus, along with the reform of criminal law and the prison system.93 But it became a rather conservative establishment; its Indian branches focused entirely on vegetarianism and cow protection.94 This curious and selective absorption of late Victorian animal ethics within contemporary Indian politics led to an early and important failure of the nationalist political thought to generate a critique of or even a debate around laboratory science. The nationalist critique of modern science was essentially limited to the cultural domain, designating science as 'Western' and thereby searching for its Eastern roots and counterparts, without examining its methodological and experimental methods.95

This rhetoric around animals overlooked the use of animals in Indian laboratories. While the Indian SPCAs sought to protect domestic animals from their Indian handlers, the Hindus sought to protect the cow from being slaughtered by Christians and Muslims. The pariahs, rabbits and other animals meanwhile were subjected to cruel scientific experiments in the laboratories. The laboratories producing these vaccines became symbols of scientific progress in colonial India, thereby transcending political and moral critique.

ANIMAL EXPERIMENTATION AND COLONIAL LEGISLATION

The formal dismissal of the issue of ethics of animal experimentation in India was facilitated by the machinations of the colonial state, which had also instituted the Indian cruelty against animal acts. This was accomplished through a negotiation between anti-vivisectionist sentiments in Britain and Pasteurian assertions in India. The Hyderabad Chloroform Commission had attracted strong criticism from antivivisectionists in England. Herbert J. Reid, Secretary of the London Antivivisection Society, protested against experiments on helpless animals in India. He raised the moral responsibility of the English in India: "The responsibility the English nation has assumed in India is a grave one, whether, political, social, scientific or religious and our actions should not decry our doctrines."96 Faced with such sentiments, Lord Marquis, the Secretary of State for India, wrote to the Governor General in August 1892 about the possibility of introducing the 1876 British Act against vivisection in India.97 This was a time when the Pasteur movement was gaining momentum in India, and there was an immediate reaction from colonial scientists and officials that highlighted the moral support for Pasteurian methods in the colony. They saw the proposed legislation as a hindrance to progress and a scientist stressed, "This [India] is a country where a Pasteur Institute is more wanted than almost anywhere else".98 The *Civil and military gazette*, which was at the forefront of the Pasteur movement, regarded the proposed

act as “a piece of legislation which is being thrust on the Government of India by the Secretary of State”.99 Lawrie, who had conducted the chloroform commissions, applauded the use of animals as resources for science: “the Commission was in a sense a fortunate thing for them [the pariah dogs], because otherwise, in the usual course of things, they would have had to be killed as a nuisance by strychnine, which is an unpleasant death, without the satisfaction of having been of any use to the world.”100 Indian animals were needed to be sacrificed for this cause: “There is no country in the world where experiments upon animals are so singularly necessary and so sure to benefit mankind and animals also as India.”101

W. A. C. Roe, Civil Surgeon at Sialkot and the Honorary Secretary of the Pasteur Committee, suggested that the introduction of such an Act at a time when the Cow Protection movement was going on would be a “grave mistake” as it could turn the wrath of the Hindus towards the British government. The government should be involved only in the progressive task of encouraging research.102 The Principal of Grant Medical College of Bombay reiterated, “Encouragement of scientific work, rather than repression of it, is wanted in this country”.103 According to J. M. Campbell, Collector of Bombay, the 1876 Act had robbed the “manliness” of the English and their position in the “front rank of medical discoverers”. In the Empire there was the need and scope, according to him, to reassert the lost masculine virtues.104 For others such as Justice Starling of the Bombay Bar, a debate on the morality of science was misplaced in India, where according to him there was a general lack of scientific aptitude among its people.105

The British consistently projected Indian social practices as the main sites of cruelty rather than the laboratories, even when confronted with evidences of cruel animal experimentation. T. D. Beighton, District Judge in Bengal, reported about a “gentleman” from England, who had carried out operations “in a scientific manner” on living monkeys in the Zoological Gardens of Calcutta. He also added that experiments which were set to be conducted on behalf of the Ganja Commission on living animals could be shocking to those in England: “The present practice of allowing painful experiments on living animals to be performed by medical men, and even by irresponsible individuals without the restrictions imposed by any Vivisection Act, would undoubtedly and justly shock public opinion in England.” Yet for him the main problem lay with Indian social practices which required legislation: “The habitual disregard of pain and suffering inflicted on domestic animals, which is unfortunately so characteristic of this country….”106 Even the Indian SPCAs, the bastions of existing legislation against animal cruelty in India, opposed the proposed legislation. John F. Norris, President of the Calcutta SPCA, regarded the draft bill with “horror” and “detestation”. He thought that rather than banning it, the bill would legalize the infliction of the most “hideous and exquisite” torture on animals.107 Due to their dual status in colonial India as representatives of both British humanitarianism and imperial power, the Indian SPCAs remained oblivious to the problems of scientific experimentation in India. For them too, the morality of legislation was defined by the perceived ills of Indian society. Benjamin Bryan rejected the need for new legislation and stressed that instead the 1890 Act was to remain the moral paradigm for India, as he asked his imperial brethren to “Remember your own Act of 1890; allow its motives still to guide you, and continue to be in India the

protectors of those who cannot plead for themselves. Let not the threatened disgrace and danger of this Act fall upon the noble Empire of India".108

Another factor behind this pessimism concerning new legislation was that contemporary animal activities in Britain were confronted with a difficult situation regarding such legislation. The RSPCA was a less radical group than the antivivisectionists and often did not agitate for legal strictures against animal experimentation. At the time of the 1876 legislation the antivivisectionists wanted a total ban on animal experimentation but the RSPCA acted cautiously, particularly because it depended heavily on support from aristocratic lovers of field sports.109 In the post-1876 era in Britain, while the antivivisectionists took up a more radical position towards total abolition of animal experimentation, the RSPCA continued to press for stricter regulations. The 1876 Act had also demonstrated that a total ban through legal measures was untenable, as scientists with licences could continue such research. Probably that is why the Indian SPCAs opposed the proposed act for India.110

In England this scepticism towards legal intervention had given way to a widespread popular movement against animal experimentation. In the 1890s, the antivivisectionists in Britain had led a popular movement against the establishment of the British Institute of Preventive Medicine. The scientists who supported the Institute faced strong public opposition and preferred to maintain a low profile; the Institute often did not respond to public criticism or produce a public defence of its position. It instead practised secrecy, and was unwilling to engage in public debate, sometimes even resorting to spying on the antivivisectionists.111 In India, by contrast, scientists were at the forefront of public and social debate in favour of Pasteur and bacteriology and on the offensive against antivivisectionists. Harvey, Surgeon-General of Bengal and the Secretary of the Bengal Branch of the Pasteur Committee, spoke in his Presidential address to the first Indian Medical Congress on "The Pasteur Institute and vivisection", where he denounced the role of Frances Cobbe and the antivivisectionists of Britain in attempting to instigate such feelings in India.112 E. H. Hankin, the Imperial Chemical Examiner based in Agra, led the strongest protest against the proposed Act. He had found the 1876 Act "banal" when he held a licence for animal experimentation in England for four years, as required by the Act.113 In India particularly, where experimental science was taking its early steps, such measures could stymie the entire process. Like other British officials he too believed that such legal measures should pursue Indian customs, which were much more cruel than experiments in the laboratory. Scientific experiment by the English in colonial India was a matter of their own morality and trust, "so far as Englishmen of science are concerned the prevention of wanton or unnecessary cruelty to animals might safely be left to their good taste and good feeling".114

With such moral and 'progressive' forces behind him, Lord Elgin wrote to the Secretary of State that legislation on vivisection in India was "unnecessary and undesirable".115 The matter, however, did not end here, as the Secretary of State, perhaps also feeling the heat of the antivivisectionists' movement at home, suggested that some "Draft Rules" be designed to regulate the practice of animal experiment.116 This too was resisted vigorously by scientists in India.117 Elgin wrote to the new Secretary of State, George Francis Hamilton, against even draft rules. He cited two reasons: first, there were very few experiments

conducted on living animals in Indian laboratories, and second, such regulations could arouse anti-government feelings at a time of volatile political atmosphere around animals in India.118 Hamilton accepted the rationale and pragmatism of the Government of India.119 These opinions of the British scientists, the Government of India and the Secretary of State against animal experimentation legislation reflected the same ideas that had generated the 1869 and 1890 legislation; that cruelty was predominantly an Indian social problem.120 H. E. M. James, the Commissioner of Sind, articulated this opinion:

> … there seems no reason why, in the absence of evidence that vivisection is performed with unnecessary cruelty in India, the brief time which Government can devote to legislation should be taken up by an Act, of the need of which there is no evidence…. Legislation against Indian evils, such as hook-swinging, seems more urgent.121

THE LURKING INNUENDO: CRUELTY AND THE COLONIAL STATE

This liberal, benevolent and authoritarian posturing towards Indian animals, and the simultaneous allusions to cruelties in Indian social practices by the British, concealed a denial and a repression. British activism and legislation around animals in colonial India were confined to addressing Indian social practices. The role of the colonial state and its institutions in exploiting animal resources remained outside its purview. Precisely at the time when animals had become symbols of nationalist politics and subjects of imperial empathy, they also comprised a great resource for the colonial state. Animals had been massively used in colonial enterprises in the nineteenth century, in the timber industry, in the army and in hunting sports.122 In most of these cases, the British themselves did not "handle" the animals, which were in charge of their Indian subordinates, who often bore the blame of cruelty. Wild animals were also exterminated by the colonial state in its search of agricultural resources. From the 1850s to the 1920s, state-sponsored projects aimed at eliminating Indian wild animals.123 Throughout the late nineteenth century there were reports about the declining numbers of wild animals and forest lands.124

British animal sympathizers did not acknowledge this link between the colonial state and animal resources. In the Second Afghan War (1878–80), in which the British army had suffered disastrous losses, thousands of elephants, horses, ponies, mules and around fifty thousand camels died in a few months (Figure 2). J. L. Kipling suggested that the camels died in such massive numbers because they had been deliberately left to die by their native owners, who were guaranteed compensation for their losses.125 There is little evidence to support this claim.126 Torick Ameer Ali suggested that this huge animal sacrifice haunted the conscience of Kipling, an animal lover, and he perhaps wrote such a disclaimer to ease his conscience. It is here that we find a moral dilemma, to use Kipling's own words, a "side door" in fact into the Imperial mindset and in Ali's words, a "lurking innuendo".127

The Cruelty Acts (1869 and 1890) were part of a larger process whereby the British had sought to introduce a rational and legal paradigm within Indian society and landscape, which appeared so intertwined with cruelty, criminality and wilderness. There is a continuum here; Grant, the founder of the Calcutta SPCA, as an artist had sketched the detailed physiognomic characteristics of different "Oriental heads", particularly "thugs" and

"dacoits", giving distinct physicality to the so-called "criminal tribes".128 The Thuggee and Dacoity Department, directed towards identifying and eliminating social criminality in India, was established around the same time, and the Criminal Tribes Act was passed in 1871, closely following the Bengal animal cruelty act of 1869. During the state-sponsored elimination of large carnivores of India in the 1880s, Joseph Fayrer used the Thugee Department as a model for similar extermination of unwanted elements.129 By this virtue, such legislation remained oblivious to the practices of the colonial state.

PASTEUR IN INDIA: COLONIAL COMPROMISES

The final shape of Indian Pasteur institutes was defined by moralities and sentiments in Britain, and Pasteurian science entered India through an interesting institutional compromise. British political sentiment had a difficult relationship with Pasteurian science, which had made the Government of India wary of establishing a Pasteur Institute in India despite the support in favour of it. While formally forwarding the plans for establishing a Pasteur Institute in India to the Secretary of State in 1897, Lord Elgin stressed the fear of protests from antivivisectionists at home and suggested that the government should not be directly involved with the procedures and should rather provide support in terms of personnel and funds.130 Lord Hamilton accepted the view, noticing the "real public desire for the establishment of a Pasteur Institute in India" and that "there would be no serious objection on the part of any important section of the Indian community to the establishment of such an Institute, so long as it is not directly maintained by the State …".131 In this situation of criticism in Britain and support in India, while the Government of India was behind the founding of the first Pasteur Institute in Kasauli in 1900, it was formally established and maintained as a private institution by a Central Pasteur Committee with private subscription and government aid.132 This reflected a distancing similar to the evasions practised by the colonial state in matters of its exploitation of animals as resources. Some government officials were keen to see a more direct involvement with the iconic Pasteur institutes. In 1903, W. S. Morris complained against the "… body of persons who … exercise an influence on English politics out of all proportion to their numbers or the justice of their cause".133 He added, "The primary reason in short for dissociating Government from a direct relationship to the Institute was the apprehension that antivivisectionists at home might put pressure on the Secretary of State to disallow such connection".134 He also pointed out that the initial government apprehensions about public reaction in India against vivisection were neither a serious consideration nor justified.135 Treatment of rabies through Pasteurian vaccine gained immediate public support in India and the Governor of Punjab, Mackworth Young wrote to Curzon, "Major Semple tells me that several of his patients have gone away, declaring that they are quite converted, and will do all they can to combat the prejudice which exists among their friends; and he is quite confident that time and patience will do all that is required".136

Yet, the policy of non-involvement by the colonial state did not change even when the second Pasteur Institute was established in Coonoor in 1907. Herbert Hope Risley, the Officiating Secretary to the Government of India, urged that they be made proper government institutions: "We can discount all of the arguments against assuming control ourselves except that arising from the pressure which the antivivisectionists can put on the

Secretary of State and that has necessarily less force when directed against an institution which has been in existence for several years and has attained marked success….”137 D. C. J. Ibbetson, a member of Curzon’s executive council and the Governor of Punjab, agreed with Risley: “I think all the fear of agitation in India is over, and that the only opposition to be feared [is] in England.”138 But Curzon remained wary of any change of status:

> I am afraid that I do not agree with this advice. No one is more strongly convinced than I am of the absurdity and ignorance of the anti-Pasteur agitation; and one cannot help reading the nervous apprehensions of Lord Elgin’s Council without a smile. At the same time the Government of India then adopted and put forward a definite policy; it was accepted by the Secretary of State; it has since been introduced, and, as far as I can see, acted upon with conspicuous success. Why then should we want to change it?139

Curzon’s apprehensions had some ground as queries continued to be made from London regarding animal experiments in India. In 1906, the Secretary of State asked about the restrictions enforced in India in experiments on living animals. The laboratories and the Government of India unanimously replied that although there were no definite rules or restrictions, the principles of the 1876 Act were being followed.140 As with other matters of cruelty legislations, the issue of Englishmen and science too had become a matter of trust. The Sanitary Commissioner of India elaborated that simple instructions were adequate in India where most medical men were members of the British army, “accustomed to obeying orders without question, [so] there is no reason to fear that they will transgress the instructions given to them …”.141 One is reminded here of Hankin’s assurances about “Englishmen of science” and the treatment of the army camels in Afghanistan. No animal experiment legislation was ever introduced in British India and more importantly, the animal question never came up again in the researches of colonial science. The matter was indeed left to “the good taste and good feeling” of the British and then later to the Indian scientists. Throughout the colonial period Pasteur Institutes of India were run as private institutions. Indian laboratories became, particularly through the decades of the World Wars, important units for large-scale vaccine manufacture (Figure 3) for the British army (in India, Africa, Mesopotamia, Palestine and Egypt) and the colonial state, requiring extensive animal resources.142

CONCLUSION

The anti-vivisection issue became irrelevant in colonial India at a time when the Pasteur Institutes and bacteriological research centres were being expanded here. In 1911, Khusru J. Tarachand wrote a letter from London as a correspondent of the British Union for the Abolition of Vivisection to the Secretary of State for India, protesting against the establishment of the several Pasteur Institutes in India.143 He reminded him of the most traumatic experience of the British in India, the Revolt of 1857, in which too animals had featured centrally, adding, “The deeds done at the Pasteur Institutes would be infinitely more revolting to the Indian mind than mere greasing of cartridges with the fat of the cow and the swine”.144 The Secretary of State sent a very brief reply saying that he had dealt with the letter “as the expression of personal opinion on a subject of general interest, and decided that

no action upon it was necessary".145 To Tarachand's vehement protest that this was in fact "the views of the whole Indian community", the response was even more terse: "His Lordship sees no advantage to the public service in prolonging this correspondence."146 This was a time when animal rights and antivivisectionist movements had reached their second peak in the UK and the Second Royal Commission on Animal Experimentation had produced its report in 1913, which brought in even stricter animal experiment legislation.147

What is distinctive in this colonial situation is how an extremely volatile circumstance was mitigated into a moral and political resolution. This paper studies an interesting encounter, or rather the lack of it, between some of the most significant British contributions to modern India, rule of law, modern science, utilitarianism and humanitarianism. Science, particularly bacteriology and its laboratories, as introduced by the British in colonial India, appeared as the moral force and thereby secured immunity from any alternative moral critique of its methods. As a consequence, while laboratory methods travelled, their critique did not. Moreover, at a time when sympathies towards animals were so devoutly expressed in the Empire both by Europeans and Indians, animals were also becoming the resources of the colonial state as well as being sacrificed in the pursuit of modern science and technology. This entire phenomenon had remained outside the purview of animal empathy in the Empire as expressed by both British residents and Hindus and its moral, political and social agendas. The entry of the animals into the laboratories was facilitated through this oversight and Indian laboratories were set to become sites of peripheral experiment and research.148 Animals became subjects of science in colonial India by bearing the burdens of colonialism, modernity and science.

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REFERENCES

1. Papers and correspondence of John Cunningham, 1880–1968. Edinburgh University Library; 2004. p. E. 15
2. Rupke, N., editor. Vivisection in historical perspective. London: 1987.
3. Harrison B. Animals and the state in nineteenth-century England. English historical review. 1973; lxxxviii:786–820.
4. Lynch ME. Sacrifice and the transformation of the animal body into a scientific object: Laboratory culture and ritual practice in the neurosciences. Social studies of science. 1988; xviii:265–89. [PubMed: 11645862]
5. Simon J. Monitoring the stable at the Pasteur Institute. Science in context. 2008; xxi:181–200. [PubMed: 18831136]
6. Latour, B. Pasteurization of France. Cambridge, MA, and London: 1988.
7. Ibid. p. 12
8. Upon opening the black box and finding it empty: Social constructivism and the philosophy of technology. Science, technology, & human values. 1993; xviii:362–78. For such a critique see Langdon Winner.

9. Willis, M. Unmasking immortality: Popular opposition to laboratory science in late Victorian Britain. In: Clifford, D.; Wadge, E.; Warwick, A.; Willis, M., editors. Repositioning Victorian sciences: Shifting centres in nineteenth-century thinking. London: 2006. p. 207-18.

10. Turner, J. Reckoning with the beast: Animals, pain, and humanity in the Victorian mind. Baltimore and London: 1980.

11. Franklin, A. Animals and modern cultures: A sociology of human-animal relations in modernity. London: 1999. p. 2-6.

12. Van Sittert L. Keeping the enemy at bay': The extermination of wild carnivora in the Cape Colony, 1880–1910. Environmental history. 1998; iii:336–56.Rangarajan M. The Raj and the natural world: The war against 'dangerous beasts' in colonial India. Studies in history. 1998; xiv:265–99.

13. See Rangarajan. The Raj and the natural world. ref. 12. Brown K. Tropical medicine and animal diseases: Onderstepoort and the development of veterinary science in South Africa 1908–1950. Journal of Southern African studies. 2005; xxxi:513–29. [PubMed: 16628249] Davis DK. Brutes, beasts and empire: Veterinary medicine and environmental policy in French North Africa and British India. Journal of historical geography. 2007; xxxiv:242–67.For a study of early nineteenth-century British attitudes towards Indian animals, see Sivasundaram S. Trading knowledge: The East India Company's elephants in India and Britain. The historical journal. 2005; xlviii:27–63.

14. Arnold, David. Colonizing the body: State medicine and epidemic disease in nineteenth-century India. Berkeley: 1993.

15. Mills, JH. Body as target, violence as treatment: Psychiatric regimes in colonial and post-colonial India. In: Mills, JH.; Sen, Satadru, editors. Confronting the body: The politics of physicality in colonial and post-colonial India. London: 2004. p. 86-101.p. 96

16. Collingham, EM. Imperial bodies: The physical experience of the Raj, c. 1800–1947. Cambridge: 2001. p. 143-4.

17. Anderson, C. Legible bodies: Race, criminality and colonialism in South Asia. Oxford: 2004.

18. John, Stewart. Chloroform anæsthesia. The Canadian Medical Association journal. 1914; iv:1053–64. 1054. One scientist wrote about this difference about chloroform in the two cities in the 1850s as: "in Edinburgh chloroform was proverbially safe, in London notoriously dangerous".

19. The states of British India that were ruled by native princes before the Indian Independence Act of 1947.

20. Report of the Hyderabad Chloroform Commission. Bombay: 1891. p. 3

21. The Hyderabad Commission on Chloroform. The lancet. Mar 2.1889 :438.

22. Report of the Hyderabad Chloroform Commission. :6. ref. 20.

23. Lawrie E. The Hyderabad Chloroform Commission, Correspondence. The lancet. Sep 21.1889 : 601–2.

24. Report of the Hyderabad Chloroform Commission. :11. ref. 20.

25. The lancet. Dec 7.1889 :1183.

26. Thomas KB. Chloroform: commissions and omissions. Proceedings of the Royal Society of Medicine. 1974; lxvii:723–30. 726. [PubMed: 4609043]

27. Masson AHB, Wilson J, Hovell BC. Edward Lawrie of the Hyderabad Chloroform Commission. British journal of anaesthetics. 1969; xli:1002–11. 1006. As quoted in.

28. Report of the Hyderabad Chloroform Commission. p. 25ref. 20To give a few examples, "Complete, or almost complete, asphyxia, as by forcibly closing the nose and mouth, smothering by holding the mouth and nose tightly closed, … smothering again while the animal was well under chloroform, smothering again when it was just about to come out of chloroform … [given chloroform again] … smothering again. These observations were accompanied by *very violent struggling*, and the smothering was consequently ineffective … smothering again … chloroform was then pushed until respiration ceased, and the animal died in spite of artificial respiration", *ibid*., 19

29. The report of the second Hyderabad Chloroform Commission. The lancet. Jun 21.1890 : 1369.However, the findings of the Commission were ultimately rejected in London. In a short time physiologists had devised experiments that seemed to demonstrate errors in the Hyderabad methods, and the medical press asserted that human beings continued to die in England under chloroform from paralysis of the heart, and that ether was the better alternative. By the early

twentieth century it was banned in most Western nations, “American Medical Association Committee on Anaesthesia” (1912). Some of the important Chloroform Committees and Commissions were: Royal Medico-Chirurgical Society (1864), The Glasgow Committee (1877), British Medical Association Anaesthetics Committee (1891), British Medical Association Special Chloroform Committee (1901), seeThomas KB. Chloroform: Commissions and omissions. Proceedings of the Royal Society of Medicine. 1974; lxvii:723–30. [PubMed: 4609043] In India until 1928, chloroform was the only anaesthetic used. It was cheap and easy to use.

30. Brunton L, Fayrer J, Rogers L. A method of preventing death from snake bite, capable of common and easy practical application. Indian medical gazette. 1904; xxxix:327–33.
31. Indian journal of medical research. 1914–15; ii:126.
32. Brunton, et al. A method of preventing death from snake bite. :331. ref. 30.
33. Report on the effects of artificial respiration, intravenous injection of ammonia and administration of various drugs, etc. in Indian and Australian snake-poisoning; and the physiological, chemical, and microscopical nature of snake-poisons. Calcutta: 1874. p. i-lxvii.
34. Stokes, E. The English Utilitarians and India. Delhi and Oxford: 1982. p. 311first publ. 1959
35. Mittra, PC. Life of Colesworthy Grant, founder and late honorary secretary of the Calcutta Society for the Prevention of Cruelty to Animals. Calcutta: 1881. p. 20-23.
36. Stillman WO. The prevention of cruelty to animals. Proceedings of the Academy of Political Science in the City of New York. 1912; ii:150–8. 150.
37. Mittra. Life of Colesworthy Grant. :19. As quoted in. ref. 35.
38. Ibid. :20.
39. To see how stories of dogs in colonial Africa were indeed stories of colonialism, see, Gordon, RJ. Fido: Dog tales of colonialism in Namibia. In: Beinart, W.; McGregor, J., editors. Social history of Africa and environment. Oxford: 2003. p. 240-54.Also see Palsetia JS. Mad dogs and Parsis: The Bombay dog riots of 1832. Journal of the Royal Asiatic Society. 2001; xi:13–30.
40. Kipling, JL. Beast and man in India: A popular sketch of Indian animals in their relations with the people. London: 1891. p. 306-7.
41. Tropp J. Dogs, poison and the meaning of colonial intervention in the Transkei, South Africa. Journal of African history. 2002; xliii:451–72. In South Africa there were state-sponsored mass killing of “kaffir dogs” owned by the Africans for their hunting to protect the wild life reserves for the state and for European sports.
42. Soldier’s dogs in India. Civil and military gazette. Mar 20.1890 :6.
43. Civil and military gazette. Dec 15.1890 :7.
44. Civil and military gazette. Mar 6. 1896 “The dog question” from “Anti Rabies”, Letters to the Editor; p. 5
45. The dog nuisance in Bombay. Civil and military gazette. Mar.1892 :95.
46. Pioneer mail. Feb 25.1892 :7.
47. A. Newnham to the President, Municipal Committee, Municipal Office, Shimla, 5 June 1885, “Destruction of mad dogs in Shimla, 1885–1906”, B. no. 3, S. no. 21, A-4, vol. i, pp. 15–16. State Archives, Himachal Pradesh, Prabhat Sadan, Shimla.
48. Letters to the Pioneer. Pioneer mail. Feb 20.1896 :27.
49. Bannerman WB. Report on the treatment of snake-bite with potassium permanganate. Indian journal of medical research. 1914–15; ii:153.
50. Bill submitted by the Government of Bengal for the prevention of cruelty to animals. National Archive of India (hereafter NAI); New Delhi: Feb 6. 1869 Home, Public, 170 B
51. Bailkin J. Indian yellow: Making and breaking the imperial palette. Journal of material culture. 2005; x:197–214. 206.
52. Mittra. Life of Colesworthy Grant. :23. ref. 35.
53. A Bill for the Prevention of Cruelty to Animals. Asia, Pacific and Africa Collections, British Library: Jan 21. 1890 p. 218Public and Judicial Departmental Papers, L/PJ/6/270hereafter APAC
54. Hotchkiss J. The jungle of Eden: Kipling, wolf boys, and the colonial imagination. Victorian literature and culture. 2001; xxix:435–49. 438.Also see Brown, Mark. Race, science and the construction of native criminality in colonial India. Theoretical criminology. 2001; v:345–68.

55. Brantlinger, P. Rule of darkness: British literature and imperialism, 1830–1914. Ithaca and London: 1990. p. 199-226.
56. Mittra. Life of Colesworthy Grant. :16–17. ref. 35.
57. Skuy, David. Macaulay and the Indian penal code of 1862: The myth of the inherent superiority and modernity of the English legal system compared to India's legal system in the nineteenth century. Modern Asian studies. 1998; xxxii:513–57.
58. Father of Rudyard Kipling and professor of architectural sculpture in the J. J. School of Art in Bombay.
59. Kipling. Beast and man in India. :1. ref. 40.
60. Ibid. :14–15.
61. Ibid. :152–3.
62. Ibid. :330.
63. Ibid. :330.Also see Hotchkiss. The jungle of Eden. :438. ref. 54. The same year, 1890, Rudyard Kipling published a haunting story about a British civilian named Fleete, who in an inebriated state had defiled a Hanuman temple and was nuzzled in the breast by a strange, faceless "silver man". Overnight, Fleete, the cursed man, turned into a "beast", The mark of the beast. Pioneer mail. Jul 16.1890
64. Kipling. Beast and man in India. :331–2. ref. 40.
65. Ibid. :332.
66. Ibid. :335.
67. Ibid. :336.
68. Lord Dufferin in his final speech in 1888 had stressed the need for British rule in India: "They [the Indians] ought to feel that there is no greater blessing to a country than the existence of an external, dispassionate, immutable, authority, whose watchword is 'Justice,' who alone possesses both the power and will to weld the rights and *status* of each separate elements of the Empire into a peaceful, co-ordinated, and harmonious unity", File 1978, Article, Times. Dec 3.1888 "Latest Intelligence" (from our Correspondents), Lord Dufferin of India, Calcutta, L/PJ/6/241.
69. See e.g., the Editorial, Civil and military gazette. Apr 8.1890 :3.
70. 17 March 1892, "Zanzibar: Order bringing into operation the (Indian) Prevention of Cruelty to Animals Act, 1890", L/PJ/6/315, File 344, APAC.
71. The prevention of cruelty to animals. Pioneer mail. Mar 30.1893 :16–17.
72. Copland I. What to do about cows? Princely versus British approaches to a South Asian dilemma. Bulletin of SOAS. 2005; lxviii:59–76. 60.
73. "A Bill for the Prevention of Cruelty to Animals", 21 January 1890, Public and Judicial Departmental Papers, L/PJ/6/270, 218, APAC.
74. S. Muthiah, "An old-age home for cattle", The Hindu, 18 August 2003. The Bombay *pinjrapole* was established in 1834 to prevent the indiscriminate slaughter of dogs by the municipality, D. O. Lodrick, *Sacred cows, sacred places: Origins and survivals of animal homes in India* (Berkeley and Los Angeles, 1981), 157.
75. Burton, I. Prevention of cruelty, and antivivisection. London and Belfast: 1879. p. 3extracted from "A E I. Arabia, Egypt and India"
76. Pioneer mail. May 25.1892 :20–21. Letter from Frances Power Cobbe, Dolgelly.
77. Pioneer mail. Oct 19.1893 :24. Letter from Benjamin Bryan, London.
78. Vivisection. The Indian spectator. Mar 6.1892 :193.
79. Memorials from the Antivivisection Society Calcutta, protesting against the establishment of a Pasteur Institute in India. Home, Medical; Oct. 1896 p. 104-7.Part BNAI (underline in original)
80. Preece R. Darwinism, Christianity, and the great vivisection debate. Journal of the history of ideas. 2003; lxiv:399–419. [PubMed: 15190909]
81. ibid. :401. Quoted.
82. Mittra. Life of Colesworthy Grant. :78, 89. As quoted in. ref. 35.
83. Lodrick. Sacred cows, sacred places. :170. ref. 74.

84. The Bengal Pasteur Institute Committee had a fair share of Bengali Hindus, Muslims, Marwaris, Jains and Parsees: the Maharaja of Ajudhia, Chunilal Bose, Chatterton, Sheo Prasad Jhunjunwla, Maharaja of Kuch Bihar, Father Lafont, A. F. M. Abdur Rahman, Babu Lakshmi Narayan Shroff, W. J. Simpson, Jotindra Mohan Tagore, etc., Civil and military gazette. Feb 19.1894 :5.
85. Copland. What to do about cows?. :62. ref. 72.
86. Fisher MH. Indirect rule in the British Empire: The foundations of the residency system in India (1764–1858). Modern Asian studies. 1984; xviii:393–428.
87. A few years before the Prince of Dholpur made an offer for establishing a Pasteur Institute, the British Resident had made regular complaints about his mismanagement of funds, once writing quite menacingly: "… I do not think that anything will ever awaken this will o' the wisp Rana to an adequate consideration of the responsibility of his position or a passably sufficient discharge of his duties as a ruler. Consequently I look on the smash as inevitable." W. J. C. (W. J. Cunningham) to W H C, 18 December 1890, "Arrangements for the Liquidation of the Details of the Dholpur State, and proposals for the Appointment of a Diwan", 1891, Foreign Department, Secret-I, Pros. January 1891, no. 10, p. 3, R/1/1/113, APAC. M. Bhagwan suggests that the adoption of modernity in the case of the Princely State of Baroda was to counter Curzon's interventionist policy, "Demystifying the 'ideal progressive': Resistance through mimicked modernity in princely Baroda, 1900–1913", Modern Asian studies. 2001; xxxv:385–409.
88. Ray, B. Hyderabad and British paramountcy, 1858–1883. Delhi: 1988.
89. Masson, et al. Edward Lawrie of the Hyderabad Chloroform Commission. :1005. ref. 17.
90. The lancet. Jun 21.1890 :234.
91. The lancet. Jun 21.1890 :234–5.
92. Divekar VM, Naik LD. Evolution of anaesthesia in India. Journal of postgraduate medicine. 2001; xlvii:149–52. [PubMed: 11832613]
93. "Indian Humanitarian Society", from J. Clayton, Secretary, Humanitarian League, London, to the Editor, *Amrita bazar patrika*, 27 February 1905, 8. For a detailed account of the Humanitarian League, see D. Weinbren, "Against *all* cruelty: The Humanitarian League, 1891–1919", History workshop journal. 1994; xxxviii:86–105.
94. The publications of the Humanitarian League in India concentrated essentially on vegetarianism and cow protection, such as, for example, L. Sundara Ram, *Cow-protection in India* (South Indian Humanitarian League, Madras, 1927); D. H. Jani, *Romance of the cow* (Bombay Humanitarian League, Bombay, 1938); S. H. Hart, *Food and character* (Bombay Humanitarian League, Bombay, 1930); B. N. Motiwala and R. S. Gokhale, *Rationale of vegetarianism* (Bombay Humanitarian League, Bombay, [1919?]); and J. N. Manker, *Testimony of scriptures against animal sacrifice* (Bombay Humanitarian League, Bombay, 1924).
95. For an elaboration of this point see P. Chakrabarti, *Western science in modern India: Metropolitan methods and colonial practices* (New Delhi, 2004), 180–248, and A. Nandy, *Alternative sciences: Creativity and authenticity in two Indian scientists* (Delhi, 1995).
96. Civil and military gazette. Jan 18.1890 :5.
97. Lord Marquis to Governor General of India, 17 November 1892, Home Department, Medical, 1893, P/4345, APAC.
98. A public want in India. Pioneer mail. Feb 4.1892 :21.
99. A vivisection act for India. Civil and military gazette. Jul 8.1893 :2–3.
100. Civil and military gazette. Jan 29.1890 :4.
101. From Lawrie to the First Assistant Resident. Home Department, Medical; Hyderabad: Oct 30. 1895 p. 1851896, P/4963APAC
102. Note from Roe, WAC. Surgeon-Lt-Colonel. Home Department, Medical; Punjab: Jul 27. 1893 p. 347Officiating Sanitary CommissionerAugust 1894, P/4554, APAC
103. Surgeon General, Govt of Bombay to Sec. Govt of Bombay, 10 October 1893, *ibid*., p. 295.
104. "Proposed Legalisation against Vivisection in India", J. M. Campbell to Bombay Govt, 2 September 1893, Home Department, Medical, August 1894, *ibid*., p. 293.
105. Minute Recorded by the Honourable Mr Justice Starling on the draft of the Bill to make further provision for the prevention of cruelty to animals. p. 294-5.*ibid*

106. T. D. Beighton to the Chief Sec, Govt of Bengal, 3 October 1893, *ibid*., p. 313.
107. J. F. Norris to the Chief Sec, Govt of Bengal, 19 January 1894, *ibid*., p. 319.
108. "An Appeal and a Warning to the People of India", 15 November 1893 [by Society for the Protection for Animals from Vivisection, London], B. Bryan, Secretary, *ibid*., p. 373.
109. Harrison. Animals and the state in nineteenth-century England. :792. ref. 2.
110. Memorial of the Scottish Society for the Total Suppression of Vivisection praying that the practice of vivisection may not be legalised in India. Scottish Society for the Total Suppression of Vivisection; Edinburgh: Dec 23. 1893 p. 371-2.P/4554APAC
111. Willis. Unmasking immortality. ref. 9.
112. Civil and military gazette. Feb.1895 :49–57.
113. Hankin to the Inspector General of Civil Hospitals, NW Provinces and Oudh. APAC; Sep 2. 1893 p. 328P/4554
114. ibid.
115. Elgin, GS.; White, AE.; Miller, H.; Brackenbury, CB.; Pritchard, J.; Westland; MacDonnell, AP. to Secretary of State for India, Simla. APAC; Aug 28. 1894 p. 375-6.P/4554
116. H, T Fowler. Vivisection Act for India. Home Department, Medical; Dec 6. 1894 p. 95Sec. of State for India, to Governor General of India in Council1895, P/4752APAC
117. Evans's letter, 26 April 1895, *ibid*., p. 176. Also, Roe to Inspector General of Civil Hospitals in Punjab, 4 March 1893, P/4345, p. 343; Roe to Junior Sec, Govt of Punjab, 29 April 1895, P/4963, p. 185, APAC.
118. Elgin and Council to Hamilton. APAC; Calcutta: Mar 25. 1896 p. 199-200.he became Sec. of State for India in 1895P/4963
119. Despatch from the Secretary of State. APAC; May 21. 1896 p. 39-40.no. 57 (Revenue)P/4693, Part B
120. For a brilliant account of violence in British social life in India, see Bailkin J. The boot and the spleen: When was murder possible in British India? Comparative studies in society and history. 2006; xlviii:462–93.
121. James, HEM. APAC; Aug 10. 1893 p. 290to Bombay GovtP/4554
122. For a study of Royal hunting sprees in the Empire causing moral outrage at home, see Taylor A. Pig-sticking princes': Royal hunting, moral outrage, and the republican opposition to animal abuse in nineteenth- and early twentieth-century Britain. History. 2004; lxxxix:30–48.
123. Rangarajan, "The Raj and the natural world" (ref. 12). Also see Annual Reports on the destruction of wild animals, L/PJ/6/459, File 2182; L/PJ/6/2, File 66; L/PJ/6/24, File 1462; L/PJ/6/2, File 66; L/PJ/6/113, File 2255; L/PJ/6/192, File 15; L/PJ/6/334, File 2071; L/PJ/6/430, File 1767; L/PJ/6/362, File 2275; L/PJ/6/430, File 1767; L/PJ/6/648, File 2106; L/PJ/6/636, File 1043; L/PJ/6/682, File 1406; L/PJ/6/723, File 1484; L/PJ/6/893, File 3661, APAC.
124. Mortality from snake-bite. Civil and military gazette. Jun 27.1890 :3.Pioneer mail. Nov 17.1892 : 8.
125. Kipling. Beast and man in India. :252. ref. 40.
126. The camels were not deserted. Most of them died in the long marches through the treacherous terrains of Afghanistan and from lack of food and supplies. Private William Atkinson, who had recently joined the army and went on to the Afghan campaign, witnessed many of these deaths which he described in his diary: 24 march 1879, During the march we had many of our poor baggage camels drop on the road side and die for want of food and sheer exhaustion as the poor animals had been on the continued march for several long days they were completely fatigued and worn out. The camel is a very hardworking animal and will go as long as the poor thing can get one leg before the other, and fall down and die rather than shirk their work…. And the camels which had dropped down would remain where it had fallen to be torn to pieces by the wild jackals, and other wild beasts and large birds of prey, who would very soon have the whole of its flesh stripped from their bones and leave their skeleton frame glaring in the trailing sun. These sceneries was [*sic*] witnessed daily by me and my comrades and most particular round about our camping ground where there was always scores of dead carcasses of camels and bullocks in all stages of mortification. And the stench which arose from the dead carriage of war was something most terrible to mention. We found every encampment in the same way in which I have spoken

of ["Journal, completed 1883, of Private William Atkinson, H.M. 67th (South Hampshire) Regiment", Mss Eur D1093, pp. 29-30, APAC].

127. "Typescripts of different versions of articles by Sir Torick Ameer Ali on Frederick Sleigh Roberts, 1st Earl Roberts (1832–1914), John Lockwood Kipling (1837–1911) and the Second Afghan War", Ch (6), Mss Eur C336/10, pp. 16–17, APAC.
128. Colesworthy Grant, *Sketches of oriental heads [1838 to 1850], being a series of lithographic portraits drawn from life, intended to illustrate the physiognomic characteristics of the various people and tribes of India* (Calcutta, 1850). See "Thugs & Budhuk Dacoits", lithograph by Colesworthy Grant from *Sketches of Oriental heads*, P2572, Prints & Drawings, British Library. Also see C. Anderson, *Legible bodies: Race, criminality and colonialism in South Asia* (Oxford, 2004), 26.
129. Rangarajan. The Raj and the natural world. :272. As shown by. ref. 12.
130. Elgin and his Council to Sec. of State, 17 March 1897, Home Department, Sanitary, Jan to March 1897 (i), P/5188, APAC
131. G. Hamilton to the Governor General in Council, 13 May 1897, *ibid*.
132. Elgin and his Council to Sec. of State, 17 March 1897, P/5188, pp. 1151–2, APAC.
133. Note by Morris WS. Proposed Establishment in Madras Presidency of the Institution for Treatment of Hydrophobia similar to Pasteur Institute at Kasauli. May 5.1903 :2.Home-MedicalJune 1903, 22–24, Part ANAI
134. Ibid. p. 3
135. Ibid.
136. Young WM, Curzon, Kasauli. Curzon papers: Correspondence with persons in India. Oct 26.1900 ii:175. 1900. APAC.
137. Note by Risley (6 May1903) Proposed Establishment in Madras Presidency of the Institution for Treatment of Hydrophobia similar to Pasteur Institute at Kasauli. Home-Medical; Jun. 1903 p. 3-4.Part ANAI
138. Note by Ibbetson (6 May 1903), *ibid*., p. 4.
139. Note by Lord Curzon (7 May 1903), *ibid*., p. 4 .
140. Restrictions enforced in India in regard to experiments on living animals. Home, Medical; Aug. 1907 nos. 43–57, NAI
141. J. T. Leslie to the GOI, 14 June 1907, *ibid*., p. 4.
142. See, e.g., Cunningham J, Brown HC, Iyengar KRK. The preparation of vaccines on a large scale. Indian journal of medical research. 1917-18; v:1–18. 1.Report of King Institute of Preventative Medicine, Guindy. Sep 30th.1932 :ii.Report. King Institute; Sep 30th. 1940 p. 34
143. Vivisection in India: The shelving of an important question, a native protest. published by the British Antivivisection Society (British Union); London: 1912. correspondence between Mr K. J. Tarachand, BA and the Secretary of State for India in Council, September 1911-January 1912for Circulation IndiaAPAC
144. Ibid.
145. Letter, 2 November 1911, India Office, Whitehall, London, APAC.
146. Letter from R. Ritchie, 13 December 1911, *ibid*.
147. Tansey EM. Protection against dog distemper and dogs protection bills: The Medical Research Council and antivivisectionist protest. Medical history. 1994; xxxviii:1–26. 1–4. [PubMed: 8145606]
148. It was precisely these laboratories that became sites of animal abuse in India, see the report published by the Animal Defenders International and National Anti-vivisection Society, *Animal experimentation in India, unfettered science: How lack of accountability and control has led to animal abuse and poor science* (London, 2003).

Fig. 1.
"Unloading elephants for work in the timber industry in the Andamans", Port Blair, *c*. 1930s (Patrick Dady family collection).

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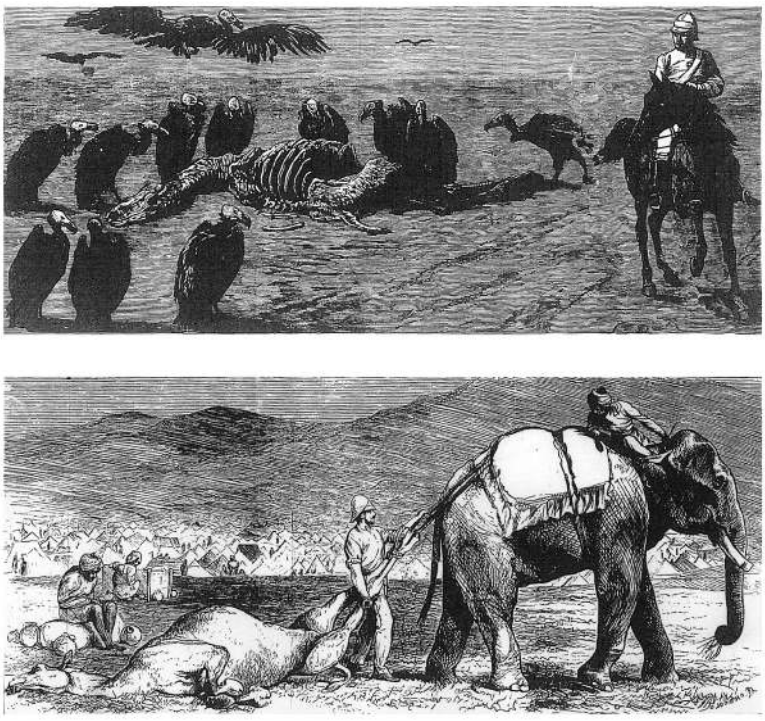

Fig. 2.
Dead army camels in the Second Afghan War, 1878–80: (*above*) “A Vultures’ Feast”; (*below*) “Elephant Removing a Dead Camel from the Camp at Tumrood”. *The graphic*, 15 March 1879, 276.

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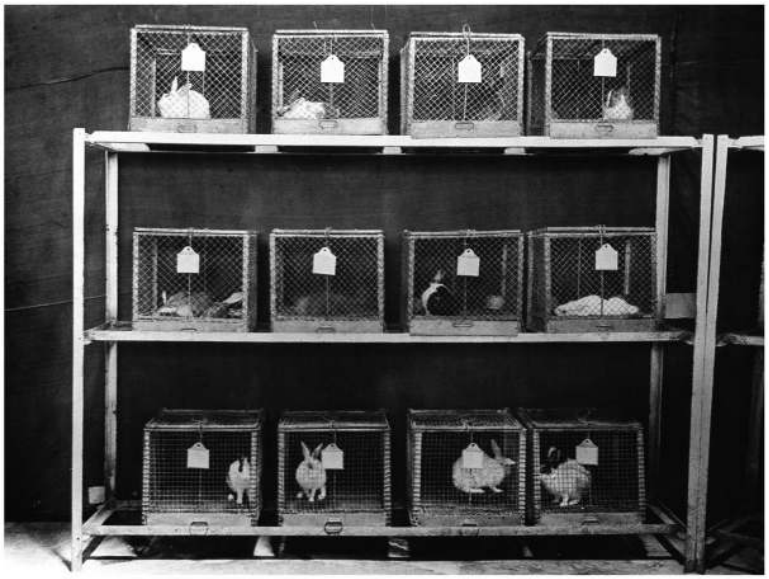

Fig. 3.
Production of rabies vaccine. Inoculated rabbits in different stages of paralysis, Pasteur Institute, Kasauli, India, *c*. 1910 (Wellcome Library, London).

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