# Beasts, Murrains, and the British *Raj* : Reassessing Colonial Medicine in India from the Veterinary Perspective, 1860–1900


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# Beasts, Murrains, and the British *Raj*: Reassessing Colonial Medicine in India from the Veterinary Perspective, 1860–1900

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SUMMARY: Assessments of colonial medicine in India have, until now, focused almost exclusively on questions related to human health. This article shifts attention to the subject of animal health and reexamines existing hypotheses about colonial medicine in India from this new perspective. It looks at the linkages between veterinary medicine and the military and fiscal policies of the colonial state, arguing that animal health in the larger colony remained neglected throughout the late nineteenth century as a result of these policies. In arguing this, the essay examines several areas related to veterinary medicine in India, including bacteriology, veterinary training, horse breeding, and disease control.

KEYWORDS: cattle, India, veterinary, military

It is difficult, if not impossible, to picture the Indian rural landscape without livestock. To anyone with the faintest familiarity with the agrarian context, their massive significance would be quite self-evident—they were a form of property, a means of transport, and a source of food, manure, and fuel. Yet, though there is an extensive body of historical work on agrarian processes and structures, the intrinsic importance of cattle in the life of Indian peasants has received comparatively scanty attention.[1]

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1. Marxist historians have, understandably, been responsible for much of the pioneering work on agrarian structures. However, they seem to have ignored Marx's own belief in the transformative potential of mobile forms of property in India. In a letter to Vera Zasulich, Marx noted that mobile property would lead gradually to differentiation of wealth, thereby

Cursory references and *obiter dicta* contained in these works do bring livestock's centrality to the fore. Jairus Banaji, for example, makes the significant observation that cattle were so integral to the peasant economy in nineteenth-century India that any household without them "was a household on the verge of extinction."[2] However, despite this overwhelming significance of livestock for the rural economy, little effort has gone into exploring the issue any further. This is true not just of historians dealing with agrarian structures but also of those working in other areas such as the history of medicine. The latter have, for example, completely sidestepped the question of veterinary health in South Asia despite huge cattle mortalities through epizootics and cattle diseases. Such lack of interest is especially surprising keeping in mind the fact that veterinary medicine was a part of the overall apparatus of public health in India—a subject that has been at the center of many historical works in the recent past.

Admittedly, a debate was taking place during the late nineteenth century both in Britain and in India over the question of whether veterinary medicine was part of the larger public health administration. However, by the 1880s, growing concerns over linkages between animal and human disease and over the ill effects of ingesting infected meat had allowed veterinarians to make some ingress into the public health administration.[3] In

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making it possible for conflict of interests to arise: Second draft of a letter to Vera Zasulich, dated March 8, 1881, in Suniti Kumar Ghosh, "Marx on India," *Monthly Rev.* 35, no. 8 (January 1984): 39–53, here 41–42.

2. Jairus Banaji, "Capitalist Domination and the Small Peasantry: The Deccan Districts in the Late Nineteenth Century," in *The World of the Rural Labourer in Colonial India*, ed. Gyan Prakash (Delhi: Oxford University Press, 1992), 113–46, quotation on 124. David Hall-Matthews also notes that "the need to purchase (or replace) cattle was among the most common reasons given for *ryots* first getting into debt," in *Peasants, Famines and the State in Colonial Western India* (Basingstoke, UK: Palgrave, 2005), 35. Others like Neeladri Bhattacharya have drawn links between the absence of livestock and reduced access to markets, which created a space for merchant moneylenders to proliferate: "Lenders and Debtors: Punjab Countryside, 1880–1940," in *Credits, Markets and the Agrarian Economy of Colonial India*, ed. Sugata Bose (Delhi: Oxford University Press, 2004), 197–247. Significant among works that deal directly with cattle in nineteenth-century India are David Gilmartin, "Cattle, Crime and Colonialism: Property as Negotiation in North India," *Indian Econ. Soc. Hist. Rev.* 40, no. 1 (2003): 33–56; and Laxman Satya, *Ecology, Colonialism and Cattle: Central India in the Nineteenth Century* (Delhi: Oxford University Press, 2004). Satya's book, however, focuses entirely on colonial measures that led to a degradation of central India's cattle wealth and ecology and does not explore other aspects of the livestock economy of the region.

3. Anne Hardy, "Pioneers in the Victorian Provinces: Veterinarians, Public Health and the Urban Animal Economy," *Urb. Hist.* 29, no. 3 (2002): 372–87. See also Keir Waddington, *The Bovine Scourge: Meat, Tuberculosis and Public Health, 1850–1914* (Woodbridge, UK: Boydell, 2006).

India too zoonoses such as bovine tuberculosis and anthrax raised major concerns even though they did not lead to any remarkable increase in the authority of the veterinarian. What is important to recognize in the Indian context, however, is that in the case of both animal and human health, the state's response was swift and powerful when diseases threatened to encroach into sanitized British spaces. Just as certain human diseases like plague and cholera were accorded priority, animal diseases such as surra or glanders—seen as threats to the health of prized British horses—received greater attention. On the other hand, cattle diseases that were quite widespread did not receive an equal degree of attention, despite leading to disastrous consequences for the rural agrarian economy. It could be argued that this neglect of cattle diseases was partly a consequence of the general neglect of village sanitation, which was a feature not only of the Indian public health administration but also of that in Britain. However, in the case of Britain, the pressure of public opinion could lead to concrete action at least in situations where epizootics assumed huge proportions, as could be seen during the great Cattle Plague outbreak of 1865–67.[4] In a striking contrast, much larger outbreaks that occurred in India on a sustained basis led to very little action on the part of the colonial state. The state's inaction was therefore much more apparent in the colonial context, and a study of the reasons behind this inactivity could possibly lead to a partial answer to the rhetorical question, "What is colonial about colonial medicine?" that has been often posed in recent times.[5] In answering this question, we will look at various aspects of veterinary medicine while focusing specifically on developments in northern India. This will include areas such as bacteriology, veterinary training, horse breeding, and the work of the Civil Veterinary Department. The overall aim of the article will be to study colonial veterinary policies in detail and to point out the various ways in which these policies differed from those implemented in the case of human health. It will also be argued that the lukewarm colonial response to the threat of epizootics, at least until the end of the nineteenth century, was chiefly due to a preoccupation with areas of military interest such as horse breeding.[6]

4. Cattle plague was an amorphous term that was often used to denote a variety of diseases, but in most cases they were used for outbreaks of rinderpest.

5. See, e.g., Shula Marks, "What Is Colonial about Colonial Medicine? And What Has Happened to Imperialism and Health?" *Soc. Hist. Med.* 10, no. 2 (1997): 205–19.

6. It must be mentioned here that this article does not deal with the question of peasants' and cultivators' negotiations with colonial veterinary policies and with cattle disease in general, and focuses entirely on colonial veterinary policies. Healing practices followed by cattle owners will be the subject of a separate study that will follow in future. The question of the impact of famines on cattle and the peasant economy will also be the subject of a separate study.

## Epizootics and Cattle Mortality

Turning our attention first to the subject of mortality due to murrains,[7] it is quite evident that many regions of the subcontinent suffered such losses to their livestock on a sustained basis as was sufficient to cripple the economy for some time to come. A series of epizootics in the Ferozepur district of Punjab in 1894–95 left, according to cautious official estimates, nearly 84,000 animals debilitated and unfit for plowing, while directly killing more than 20,000.[8] Another massive scourge that had visited the Manbhum district in Bengal a few decades earlier carried away large numbers of livestock for three years in a row, peaking at the figure of 73,000 deaths in 1863, though even this is quite likely to be an underestimate.[9] There was in fact a general tendency to underreport these figures, partly owing to a lack of personnel and partly due to the veterinarian's preoccupation with the subject of horse breeding, a subject that we will discuss in detail later.[10] This is acknowledged with disarming frankness in official reports, and the same report that contains the numbers quoted above on the Ferozepur outbreak also notes,

> [It can be stated] with certainty that the statistics are, in the great majority of cases, absolutely unreliable and misleading. My own experience, of the reports received from district officers, is that they are practically valueless as a rule, and the number of deaths would have to be *multiplied by many thousands* to reach a figure representing the true total.[11]

Referring again to this tendency to underreport, the inspector general also made very pessimistic remarks as late as 1896, going so far as to say that he had "given up all hope of ever getting reports of disease which [could] be of any value."[12] However, though mortality figures were in most cases gross underestimates, they still point toward the huge scale

7. The term "murrain" was used widely in the nineteenth century to refer to epizootics.

8. "Provincial Report of the Civil Veterinary Department of Punjab for the Year 1894–5" (Lahore: Civil and Military Gazette Press, 1895), 18.

9. These numbers include both cows and buffaloes. The figure was closer to thirty thousand for both 1861 and 1862: "Papers Relating to Cattle Disease" from the series "Selection for the Government of Bengal, XLIII," no. 43 (Calcutta: Calcutta Central Press Company Limited, 1869), 46.

10. The lack of personnel was particularly acute before the formation of the Civil Veterinary Department in 1892, when the responsibility for reporting on cattle mortality fell on the shoulders of the district officials.

11. "Provincial Report" (n. 8), 116, emphasis added.

12. "Annual Administration Report of the Civil Veterinary Department in India, 1895–6" (Calcutta: Government of India Press, 1896), 155.

of deaths and losses. To put them into perspective, mortality figures for single districts like Manbhum were comparable with those for the whole of Great Britain during its greatest ever outbreak of cattle plague in 1865: whereas 278,943 heads of cattle fell to the outbreak in Britain between 1865 and 1867, nearly 130,000 deaths occurred in Manbhum over a similar duration.[13] Such pestilential outbreaks within a relatively small territory without doubt spelled nothing short of a major disaster for livestock owners from which they took years, if not decades, to recover. The price of the meanest cattle in the wake of these episodes reached such levels as to turn them into items of luxury affordable only to the wealthiest.[14] What followed was a "cattle famine," leading, in many cases, to a food famine due to the intimate link between cattle and cultivation. In certain exceptionally bad years, when epizootics spread over larger areas, agricultural production over large tracts of the country could suffer. This was certainly the case in 1870, when Clive Spinage estimates that the total number of dead cattle and buffaloes within India reached the figure of nearly one million.[15] All-India figures for cattle mortality are difficult to obtain, but Laxman Satya has calculated from discontinuous sets of data culled from annual reports that within the space of sixteen years at the end of the nineteenth century, the province of Berar lost nearly eleven million cattle to disease, which was almost equivalent to the total cattle population of the province.[16]

The severity of these losses is also reflected in the fact that comparisons were often made between dreaded epidemics such as cholera and epizootics. Writing of "native" beliefs in this regard, a colonial official noted that "they consider that what cholera is to man, *puschima* [rinderpest] is to the cattle,"[17] while another official in the same year offered his consid-

13. For mortality figures for Britain, see John R. Fisher, "Cattle Plagues Past and Present: The Mystery of Mad Cow Disease," *J. Contemp. Hist.* 33, no. 2 (1998): 215–28. In terms of percentages, while Britain lost nearly 6 percent of its national herd due to the epizootic, districts like Manbhum lost nearly a quarter: S. A. Hall, "The Cattle Plague of 1865," *Proc. Roy. Soc. Med.* 58, no. 10 (October 1965): 799–801.

14. The commissioner of Nuddea Division in Bengal noted that "during the last few years, a great diminution in the number of cattle has taken place, and the price of cattle is now almost ten times higher than it was formerly, and this appears to be principally owing to many cattle having been swept away by this disease, called puschima." Letter dated March 9, 1864, in "Papers Relating to Cattle Disease" (n. 9), 44–45.

15. Clive A. Spinage, *Cattle Plague: A History* (New York: Kluwer, 2003), 471.

16. He calculates the mortality for the years between 1872 and 1877, and again between 1889 and 1901. Satya, *Ecology, Colonialism and Cattle* (n. 2), 147.

17. From the commissioner of the Nuddea Division, dated March 9, 1864: "Papers Relating to Cattle Disease" (n. 9), 44. The term *puschima*, officials report note, was used interchangeably for several diseases, but in this particular instance it referred to rinderpest.

ered opinion that "the epidemic [of rinderpest] . . . is as constant in its ravages as cholera amongst human beings."[18] Since Asiatic cholera was almost unanimously seen as the ultimate scourge during these times, a comparison with it implied recognition of rinderpest's massive impact.[19] Such admission however did not automatically translate into concrete action—the colonial state in India failed to act promptly when faced with the question of rinderpest and other epizootics that affected the health of "public cattle."[20] This was apparent even at the end of the nineteenth century, by which time the colonial will to intervene into indigenous spaces due to medical reasons had supposedly intensified and strengthened.

## Military Authority and the Halting March of Veterinary Medicine

Military dominance, we will argue, was one of the reasons behind the relative neglect of epizootics and animal diseases among the civilian population. This is clear even if we look at the period prior to 1860, which is the starting point for this study. In fact the very foundation of veterinary science in India, in the last decade of the eighteenth century, rested upon military principles and requirements—early British veterinarians were after all recruited primarily to reduce growing debility and deaths within the incipient colonial cavalry.[21]

Beginning in 1796, when the first gesture toward recruiting veterinary surgeons into cavalry regiments was made, murrains and their prevention/cure were perceived almost exclusively from the military perspective.[22] As

18. Proceedings of the Board of Revenue, dated June 17, 1864: Selections from the Records of the Government of India, "Papers Relating to Cattle Diseases, LXIX" (Calcutta: Government of India Press, 1868), 12.

19. Writing about rinderpest in Southern Africa, Pule Phoofolo in fact notes, "The rinderpest crisis [was] even more ominous than the European cholera. . . . While cholera attacked people, who died and left their property behind, rinderpest spared the people to watch with utter shock and suspicion as their most valued means of livelihood perished dramatically." "Epidemics and Revolutions: The Rinderpest Epidemic in Late Nineteenth-Century Southern Africa," *Past Pres.* 138 (February 1993): 112–43, quotation on 114.

20. This term was often used in government reports to refer to cattle owned by the public at large.

21. Lt Col. J. S. Bhalla, *History of the Remount and Veterinary Corps, 1794–1987* (New Delhi: Additional Directorate General, Remount and Veterinary, 1988); Jos Gommans, *The Rise of the Indo-Afghan Empire, c.1710–1780* (Leiden, Netherlands: Brill, 1995); Diana K. Davis, "Brutes, Beasts and Empire: Veterinary Medicine and Environmental Policy in French North Africa and British India," *J. Hist. Geog.* 34, no. 2 (2008): 242–67.

22. Oriental and India Office Collections (hereafter OIOC), L/MIL/5/395, 75.

a result, the first veterinary officials sent to India were almost exclusively preoccupied with the military need for more quality horses—which is reflected in the formation of a high-powered board for supervising horse-breeding operations in 1794. This need was felt as the colonial cavalry was seen to suffer a disadvantage against excessively equinely inclined adversaries like Mysore—a disadvantage that was clearly apparent in Lord Cornwallis's abortive advance on Seringapatam in 1791. In the months following this setback there was an increasing consensus that the insubstantial British cavalry, which was totally dependent on allied states for replenishment during wars, needed to become self-reliant. However, one major hurdle stood in the way of translating this consensus into action—this was the colonial obsession with "quality horses." Horses had to be of a "good character," "well formed, proportioned and limbed," and had to be at least fourteen and a half hands tall.[23] Government studs were established in Pusa, Ganjam, Hissar, and Hapur in order to achieve this end, and they used only the best imported stallions from abroad for breeding purposes. Pusa was the first stud farm to be established in 1793, while Hapur was the last one to come into existence, in 1811; the Hapur stud was in fact later converted into the Babugarh equine farm and was used both for horse breeding and as a place of instruction for villagers in the best agricultural techniques.[24]

All these experiments were launched with the military end in view, and colonial veterinarians were in effect turned into horse breeders as a result of them. Similar trends were discernable during subsequent periods as well, though of course the veterinary establishment began to acquire a much more sizeable form in the nineteenth century. This is reflected in the fact that though William Moorcroft, appointed as the superintendent of the Pusa stud in 1808, was only the first fully qualified veterinary surgeon to serve the Indian government, his ranks began to be strengthened by a steady stream of fresh British veterinary graduates joining Indian cavalry regiments in the 1820s.[25] This growing demand for veterinary experts also led during these years to a few abortive attempts to train "half-caste boys" at temporary colleges in Ballygunge and Arcot.[26]

23. This last criterion was very strictly imposed and was relaxed after several discussions only in 1816: OIOC, F/4/543/13257, 882.

24. For more detail on pre-1860 developments, please refer to my forthcoming article titled "The Economics of Reproduction: Horse Breeding in Early Colonial India, 1790–1840," *Mod. Asian Stud.*

25. In the year 1826, for example, six veterinary graduates left for Indian shores while in 1827 fourteen graduates joined the military establishments in Bengal, Madras, and Bombay. OIOC, L/MIL/9/434, 10–11.

26. The Ballygunge initiative was launched in 1822, while the Arcot experiment was made in 1811. OIOC, L/MIL/5/388; OIOC, L/MIL/5/395. The term *half-caste* was used

Taken together, these developments are indicative of the growing importance being attached to veterinary science, as a result of which the number of British-trained personnel serving in India grew to touch the figure of forty-two by the 1850s.[27] These figures climbed even further in the aftermath of the Sepoy Revolt of 1857, when a concerted effort was launched to raise the relative proportion of British cavalry regiments, as a result of which more veterinary surgeons were needed.[28] Part of these numbers was met through direct recruitment of British veterinary graduates, but a substantial chunk of the necessary manpower was obtained through a system of "foreign postings" that obliged junior veterinary officers in the British army to work in the subcontinent for a period of five years or more.[29] The salaries of these officers, while they were on deputation, were paid entirely by the colonial government, and this in effect was a huge economic subsidy for the army veterinary establishment in Britain, with which the latter was, quite understandably, unwilling to part. It is no surprise therefore that this connection between the colony and the metropolitan army was maintained throughout our period, despite complaints from deputed officers about poor pay and working conditions.

These initial developments were also portents of the fact that military interests—arising either in the metropolis or the colony—were to govern veterinary policies for some time to come. While the primacy of military motivations in policy formation is not a novel idea in the colonial context—this influence was quite palpable even in the case of human medicine—what is striking is the much more sustained, prolonged, and intense link between the military and the veterinary. By the 1860s this had become a confirmed fact, with government passivity and inaction on the subject of animal diseases among the nonmilitary cattle testifying fully to its "enclavist" ideology.[30] This point is made even more forcefully when

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to describe people of mixed race, in this case offspring of a union between Indians and British/Europeans.

27. Out of these, twenty-six were serving in Bengal, ten in Madras, and six in the Bombay presidency. OIOC, L/MIL/9/434, 28.

28. The report on a committee formed to look into the organization of the army veterinary service in India noted in 1880, "The Indian [veterinary] establishment has been gradually increased since the mutiny, for an increased mounted establishment." OIOC, L/MIL/7/831, 5.

29. OIOC, L/MIL/7/894, L/MIL/7/833, and L/MIL/7/832.

30. The term *enclavist* was first used by Radhika Ramasubban and referred to the fact that colonial medicine was characterized by racial segregation and prompt action on medical issues that had a direct impact on the health of Europeans: *Public Health and Medical Research in India: Their Origins under the Impact of British Colonial Policy* (Stockholm: SAREC, 1982).

we look at administrative reforms (or lack of them) in the area of animal health and compare them with the large number of reforms in the area of human health during the 1860s. In the case of the latter, this decade marked a decisive turning point, with numerous developments changing the nature, scope, and reach of the medical bureaucracy. For instance, in 1864 sanitary commissions were established in three presidencies, the Office of the Municipal Health Officer was set up in presidencies such as Bombay, the Registration of Births and Deaths was instituted, statistical reports began to be maintained, exhaustive reports on diseases such as cholera were written, and medical issues came to be somewhat divested of their strong military connections.[31] Noting the importance of a break or dissociation between the civilian and the military, John Lawrence, the viceroy, wrote in a private letter to the secretary of state in 1867 that "it will certainly never do to place [civilian sanitary] matters in the hands of the army sanitary commission."[32] On the other hand, veterinary health continued to be dominated by military interests, and no noteworthy regulation was adopted during this decade for the protection of "public cattle." The only major attempt to examine the state of cattle disease in India was made in 1869, when the Indian Cattle Plague Commission was appointed.[33] However, it is a telling commentary upon the degree of significance attached to cattle mortality within India that even this commission was created partly in response to the great cattle plague outbreak of 1865–67 in Britain. Quite apart from these initial metropolitan motivations, when the commission did finally painstakingly produce a massive report containing several sweeping recommendations for strengthening the veterinary establishment, few if any of them began to be implemented before a decade or two had elapsed. The commission's frenetic activities and extensive surveys succeeded, in this sense, only in papering over the inertness and immobility that characterized veterinary policy.

While the colonial government displayed a marked degree of unwillingness in implementing much-needed general veterinary measures, it sprang into action when reforms were needed within military quarters. Stirred by the numerous complaints made by officers on deputation from the British army, who constituted the bulk of the Indian veterinary contingent at

31. Deepak Kumar, "Health and Medicine in British India and Dutch Indies: A Comparative Study," in *Asian Medicine and Globalization*, ed. Joseph Alter (Philadelphia: University of Pennsylvania Press, 2005), 78–87.

32. Letter dated October 4, 1867, OIOC, John Lawrence Collection, Mss Eur/F90 32B.

33. The report of the cattle plague commission was published only in 1871. Its members included J. H. B. Hallen (president), Kenneth McLeod, Mr. A. C. Mangles, and Baboo Hem Chunder Kerr.

any given point, questions related to salaries, emoluments, and promotions were discussed frequently and extensively.[34] Other more substantive issues connected to the efficiency of army veterinary services were also raised—a letter written by Lieutenant Colonel E. Seager in 1860 on the subject of abuses of the "contract system" for shoeing and the purchase of medicines, for instance, caused a major splash in government circles and was referred to for long afterward.[35] Under this system troop officers were made solely responsible for ordering purchases or allocating contracts for their regiments, thereby bypassing the authority not only of the regimental veterinary surgeon but also of the medical department. Apart from causing the myriad ills that were pointed out by Seager, this system reflected the more general trend that we have been discussing—that of complete subordination of the veterinary officer to his military superior while carrying out both his healing and breeding functions.[36] Some attempts were made to blunt the edges of this overbearing military authority—Sir W. Mansfield, for example, initiated a debate in 1860 on the abolition of the remount agency for Bombay, which had been staffed exclusively by military personnel, and recommended the assumption of its functions by army veterinary officers led by a principal veterinary surgeon for the province.[37] Using his own proposals as the blueprint, Mansfield exerted his considerable influence to create what became informally known as the "Bombay system"; in concrete terms this meant the abolition of both the remount agency and the contract system and the appointment of J. H. B. Hallen—later to become the president of the Indian Cattle Plague Commission—as both the principal veterinary surgeon and the principal of the newly established Army Veterinary School in Pune (1862).[38] While

34. Warrants were, for instance, issued to raise salaries of these officials in 1859, 1866, and 1878.

35. Letter from Lieutenant Colonel E. Seager, commanding 8th Hussars, to the Deputy Adjutant General, Her Majesty's Forces, Bombay, no. 217, dated Nusserabad, October 2, 1860, OIOC, L/MIL/7/902.

36. Seager also pointed out this complete subordination, noting, "A veterinary surgeon, single handed, cannot afford to fight the commanding officer and other officers". Letter form Colonel E. Seager, dated October 2, 1860, OIOC, L/MIL/7/902.

37. Minutes by His Excellency the Commander-in-Chief on the Military Veterinary System of the Bombay Presidency, in Answer to Certain References Conveyed in a Resolution of Government, no. 4000 of 1860, OIOC, L/MIL/7/902. Mansfield held the command of the Bombay presidency, with the local rank of lieutenant-general, from May 18, 1860, to March 14, 1865. He was subsequently appointed the commander-in-chief in India and a military member of the executive council: T. R. Moreman, "Mansfield, William Rose, first Baron Sandhurst (1819–1876)," in *Oxford Dictionary of National Biography* (Oxford: Oxford University Press, 2004).

38. Letter from W. R Mansfield dated January 28, 1864, OIOC, L/MIL/7/897.

these measures came into force only within the Bombay presidency, larger reforms for the entire Indian cavalry establishment were also implemented—inspecting veterinary surgeons, for instance, were appointed in all presidencies in 1865 with the hope that they would lead to more effective medical supervision.[39] Furthermore, a consensus appears to have been evolving gradually at the highest levels about the need to secure effective treatment for British cavalry regiments; the Viceroy himself was reported to have been "penetrated with conviction" that the "astonishing mortality" among horses would be reduced if veterinarians were suitably employed by the army.[40] Though this great concern for military horses led to the reforms mentioned above, it also needs to be mentioned that none of them could have been implemented without extensive "native" support and involvement. To begin with, several clerks and *naulbunds* (or "native" horse breeders) were employed to organize studs and look after military horses. The power and authority of the clerk or *babu* at these farms are reflected in an incident that flared up at the Hapur stud in 1833—when a clerk called Ramruttun Sain spoke openly against a veterinary surgeon and escaped unscathed.[41] Besides this, the reliance on "natives" is also evident in the fact that at the same time as these stud experiments, other breeding experiments that had "native" breeders at their center were also organized. There was, for instance, the Zemindary scheme for horse breeding that was first formulated in the 1790s by Major Fraser, the pioneer of studs in Bengal, to cope with the spurt in demand from the newly formed cavalry corps. Launched on a small scale in 1798, the scheme initially relied on the expertise of *naulbunds*. Stallions with a supposedly excellent character and pedigree were distributed gratis among *naulbunds* with the sole condition that the company would have the right to be the first buyer of any subsequent progeny.[42] They were each assigned a certain village or a certain number of mares and were also paid for the upkeep of stallions; a "daroga" was also appointed to superintend their work and to maintain records. The scheme was continued, with minor interruptions and some modifications, for a long time and was also in operation during the latter part of the nineteenth century. The use of indigenous expertise was therefore essential in implementing the reforms envisaged by military authorities.

These debates, discussions, and reforms, however, focused exclusively on the subject of military animals, more specifically horses; the matter

39. Letter from the India Office, dated December 15, 1865, OIOC, L/MIL/7/903.
40. Letter from Colonel E. Haythorne, dated September 3, 1864, OIOC, L/MIL/7/897.
41. OIOC, F/4/1518/59945, 13–15.
42. OIOC, L/MIL/431, 210–16.

of general veterinary reforms in the subcontinent was continuously sidestepped by the highest authorities. No legislation was, for example, passed on the subject of cattle disease despite the massive annual mortalities that we have referred to above. In Britain, on the other hand, the cattle plague epidemic of 1865–67 was immediately followed by sweeping regulation in the shape of the Contagious Diseases (Animals) Act passed in 1869.[43] In fact, the policy of segregating and slaughtering diseased livestock, which was followed rigorously during the cattle plague years, was almost singlehandedly responsible for the strengthening of the principle of "stamping out" epidemic diseases. It also led to greater restrictions over imported livestock and meat, while simultaneously fueling a new interest in the etiology of rinderpest and in the field of experimental pathology in general.[44] These changes were understandable as the epidemic was often seen as the most dramatic episode in nineteenth-century British agricultural history; in fact, Fisher goes so far as to say that "no other single event has had the same impact on public consciousness."[45] What is more, legislation did not dry up in Britain once the immediate outrage over the 1865 outbreak had been somewhat dissipated—the pace actually quickened in the next decade, when several significant developments occurred.[46] Such stark differences point directly toward the colonial foundations of veterinary health in India. Whereas in the metropolis considerable value was attached to the health of the nation's livestock, in India the focus came to rest almost exclusively on protecting military livestock owned by the state.

Not surprisingly, the only general measures that were ever implemented in India pertained exclusively to epizootics like glanders that threatened the health of horses. The colonial response to glanders in fact represents a classic example of fears winning over facts.[47] The briefest of surveys would

43. Michael Worboys, *Spreading Germs: Disease Theories and Medical Practice in Britain, 1865–1900* (Cambridge, UK: Cambridge University Press, 2000), 56.

44. Waddington, *Bovine Scourge* (n. 3), 27–28.

45. Fisher, "Cattle Plagues Past and Present" (n. 13), 215.

46. Anne Hardy notes, "The 1870s were a propitious decade for launching such a campaign. The widening of the franchise under the 1867 Reform Act had stimulated the political interests of a wide section of the middle classes; the Public Health Act 1872 imposed a public health organization on local government throughout England and Wales; and the 1875 Public Health Act redefined and set out their responsibilities in this regard. In 1878 the Contagious Diseases of Animals Act required all local authorities to appoint suitably qualified veterinary inspectors." "Pioneers in the Victorian Provinces" (n. 3), 380.

47. It could be argued that these acts were passed in order to control zoonoses—diseases that could be transmitted to humans—but this was not accurate as other similar diseases such as anthrax, which were not perceived to be fatal in horses, were not brought under the purview of these acts.

immediately reveal that mortality figures related to the disease were on the lower side, being confined in most presidencies to a few dozen even during periods when other epizootics had broken out on a large scale.[48] None of the annual civil veterinary reports, either for the presidencies or the country as a whole, mention any major outbreak of glanders, yet these same reports also describe immediate segregation, observation, and treatment of glandered horses. Additionally, while the Glanders and Farcy Act of 1879 had made provisions for quarantine and similar measures, these were strengthened and multiplied manifold in the amended Act of 1899 which also gave an unprecedented degree of intrusive and interventionist powers to implementing authorities. It permitted disease inspectors to

> [e]nter and search any field, building or any place for the purpose of ascertaining whether there is therein any horse which is diseased, and [did] away with the limitations heretofore placed upon entry and search. The revised act also provide[d] for the use of tests and isolation of horses subjected thereto, and for the recovery of the expense of detaining, isolating and testing horses from owners or persons in charge.[49]

These were indeed stupendous powers and were comparable to an extent with the authority of the plague inspector during this same period.[50] However, in the case of glanders, opportunities to implement regulations arose but rarely, and therefore the likelihood of resistance or a general disquiet was rather limited. Also, in the Indian context horses were of little or no use from an agrarian perspective and were not therefore preferred as

48. For example, in the year 1895–96, while more than seventeen thousand deaths occurred due to rinderpest, only twelve cases of glanders were reported: "Annual Administration Report of the Civil Veterinary Department in the Presidency of Bombay, 1895–6" (Bombay: Government of India Press, 1896), 13–14.

49. "Review of Report by the Commissioner and Director, Land Records and Agriculture," in "Annual Administration Report of the Civil Veterinary Department in the Bombay Presidency, 1898–9" (Bombay: Government of India Press, 1889), 3.

50. The act also stipulated that a set of inspectors could be specially appointed during outbreaks of glanders and that these inspectors could in fact have uniforms of their own. For details on plague measures, see David Arnold, *Colonizing the Body: State Medicine and Epidemic Disease in Nineteenth-Century India* (Berkeley: University of California Press, 1993), especially the chapter titled "Plague: Assault on the Body," 200–239; Rajnarayan Chandavarkar, "Plague Panic and Epidemic Politics in India, 1896–1914," in *Epidemics and Ideas: Essays on the Historical Perception of Pestilence*, ed. Terence Ranger and Paul Slack (Cambridge, UK: Cambridge University Press, 1992), 203–40; and Mark Harrison, *Public Health in British India: Anglo-Indian Preventive Medicine, 1859–1914* (Cambridge, UK: Cambridge University Press, 1994), especially chapter titled "Professional Visions and Political Realities, 1896–1914," 139–65.

domesticated animals of choice except in military situations or in situations where rapid transport was of the essence.[51]

It must be mentioned here though that in arguing this we do not wish to underestimate the threat represented by diseases such as glanders. The disease had a fearsome quality during these times, partly due to the fact that the absence of any cure effectively turned it into a death sentence for horses. It was also dreaded because it could potentially be passed on to other mammals. Extreme measures against the disease were therefore partly justified; what is surprising, though, is the complete mismatch between the attention lavished upon glanders and the relative silence or inertness on the question of epizootics affecting cattle. It could be argued that colonial reticence on the subject of cattle mortality was partly a product of its fear of encroaching into areas that affected the lives of a large number of peasants. It is equally likely however that the overall horse-centric character of the veterinary administration, which was fashioned out of intensely military preoccupations, led to prompt action against diseases such as glanders and a simultaneous neglect of cattle disease. This is also reflected in the great attention paid to other equine diseases such as surra, which was the chief subject of bacteriological investigations for a number of years.[52] Also, colonial inaction cannot be completely explained by referring to the fear of encroaching into "native" spaces, especially when we recall that similar or stronger apprehensions did not prevent the state from devising extremely intrusive and interventionist measures in the case of human diseases such as plague.

## Cattle Disease and Civil Veterinary Departments

The clearest proof of colonial inaction in the case of diseases affecting "public cattle" is provided by the extremely delayed formation of the Civil Veterinary Department, which came into existence only in 1892, quite a few decades after the Sanitary Department had already been established. The idea for the creation of this department had been first mooted and

51. The instruction farm at Babugarh, where J. H. B Hallen worked for a number of years, tried to convince local peasants that horses could be more efficient in doing agrarian tasks, but these appeals appeared to have little or no impact: "Annual Administration Report of the Horse-Breeding Department of the Bengal and Bombay Presidencies, 1891–2" (Calcutta: Government of India Press, 1892), 52.

52. Though surra was communicable to other species, it was primarily a disease of horses and camels. We will discuss the bacteriological developments around surra in detail in a later section of this article.

unequivocally endorsed as early as 1883,[53] and in fact even the Cattle Plague Commission had, in 1871, underlined the great need for such wider veterinary reforms.[54] The extreme severity or "abnormality"—as one colonial official put it—of epizootic outbreaks also occasionally forced the question of "public cattle" on the consciousness of our hippophile officials, in which case they acquiesced in dispatching some unfortunate junior army veterinary officer on a short and desultory expedition to the site of the outbreak.[55] A few enlightened officials also spoke frequently against such prevalent attitudes, including Hallen and George Fleming, who was the principal veterinary surgeon to the army. Drawing a strong connection between "civilized governments" and protection of a nation's cattle wealth, Fleming noted rather emphatically in 1885 that

> [t]he institution of such a department for India is an absolute necessity, and it is astonishing it was not created at least half a century ago. I know of no country in the world under a civilized government, which has been, and is now, so severely scourged by the most deadly, though preventable animal diseases and yet in which so little has been done in the way of prevention or suppression.[56]

Fleming's open and bold indictment of the Raj invited the ire of senior-most bureaucrats,[57] but there was almost a tacit acceptance of the fact that government attention and resources were not to be squandered away on preserving "public cattle." In fact, apart from a few stray instances such as the Cattle Plague Commission, the question of preserving nonmilitary and nonequine beasts was not even discussed seriously.

53. The idea was first proposed by a committee formed to inquire into the institution of a veterinary college in Calcutta, in a letter dated July 10, 1886, OIOC, L/MIL/7/845.

54. Referring to the huge losses that occurred on a regular basis due to murrains, the commission noted, "Whenever attention has been directed to the diseases of horned stock, murrain has been found carrying off hundreds of cattle or has been ascertained to have recently done so and the natives have with one voice declared that this is nothing new—has been told them by their fathers and grandfathers—has indeed become such a feature of rural life that it occasions neither surprise not complaint." "Report of the Commissioners Appointed to Inquire into the Origin, Nature, etc of Indian Cattle Plagues" (Calcutta: Government of India Press, 1871), 37.

55. Letter dated July 10, 1886, OIOC, L/MIL/7/845.

56. Letter dated January 28, 1885, OIOC, L/MIL/7/839.

57. It was in fact considered unnecessary to reply to Mr. Fleming's letter, which contained several other criticisms of the veterinary establishment. An official noted that "it will not be necessary to reply to Mr Fleming's question. . . . Responsible authorities in India are satisfied that the present system as respects the native cavalry works well and that there is no intention of departing from it." Letter dated February 21, 1885, OIOC, L/MIL/7/839 (n. 56).

Such reticence or neglect was no doubt motivated partly by financial arguments; after all, even though murrains caused huge annual losses to agriculture, these appeared to have little direct impact on the state of colonial coffers as long as the mortality did not spread to military animals.[58] Strengthening this financial logic was the fact that, unlike in the case of human diseases, large-scale cattle deaths were very rarely linked directly to the larger question of a civilized, improving colonial government. Even public posturing was therefore not necessary, nor was there any need to devise token measures to appease ruffled sentiments. Within such a context, account books were the final arbiter on policy decisions, and though epizootics raging within localized territories could reduce the peasants' ability to pay revenues, the expenses involved in controlling such outbreaks would perhaps have far outweighed the losses they caused to the treasury. The Dutch colonial settlements in India, for instance, spent three million florins in connection with epizootics in 1881–82, which composed nearly one-third of their total budgetary deficits for the financial year.[59] Already heavily encumbered by the considerable annual costs involved in breeding and purchasing horses, the British Indian government was understandably a little reluctant to add such huge expenses to its financial ledger.

Motivated partly by the desire to obviate such huge costs, even the Civil Veterinary Department focused largely on horse-breeding operations until the end of the nineteenth century, though it was ostensibly established with the aim of reducing mortality within the civilian cattle stock. This was true not just for the central department but also for its provincial counterparts in Punjab and the North West Frontier Province, both of which labored under the strong shadow of long-standing horse-breeding departments that immediately preceded them.[60] Even J. H. B. Hallen, when appointed as the first inspector general of the Civil Veterinary Department in 1892, became almost entirely preoccupied with horse-breeding issues despite his passionate and strong views on the subject of cattle murrains. His horse-breeding duties were so extensive that it was impossible—his personal inclinations or opinions notwithstanding—to

58. Noting the huge loss to agriculture, the inspector general noted, "The vast mortality shown to have occurred proves the enormous losses which the agricultural community suffers annually . . . the loss from such cases as can be proved amounts to the large sum of Rs. 7,48,570." "Annual Administration Report of the Civil Veterinary Department in India, 1893–4" (Calcutta: Government of India Press, 1895), 84.

59. "City Notes," *Pall Mall Gazette* (Issue 5381), May 30, 1882.

60. The first report for the Civil Veterinary Department in the North West Frontier Province was published in 1902, whereas the first report in Punjab came out in 1895.

devote the slightest attention to other questions. The inspector general was, as part of his duties, expected to be extraordinarily mobile during the course of an ordinary year: he visited horse fairs in the most distant regions, branded mares, inspected stallions, purchased remounts, and traveled on average nearly twenty thousand miles.[61] His provincial colleagues followed a similar pattern, traveling comparable if not equal distances to ensure effective breeding and purchase arrangements.[62] Within such a scenario, cattle health was quite obviously relegated to the position of secondary significance, with veterinary officials admitting freely that the colonial obsession with breeding and remounts left no space for disease control. The annual report for 1893–94, for instance, stated clearly that "not much progress has been made under this head [of cattle disease]" and also reproduced a statement made by the Veterinary Superintendent of North Punjab to the effect that "during the official year under report I have had absolutely no time to investigate outbreaks of cattle disease," though he also offered the assurance that he had made arrangements to rectify this situation.[63] In the following year, though, he finally admitted full defeat, stating rather baldly,

> I have found my time so fully occupied in the horse and mule breeding industry that I have no leisure to stop and investigate outbreaks, even should I meet with them on tour, and until arrangements are made for additional help, I fear this will continue to be the case.[64]

Similar statements were made by him in succeeding years as well, and no reprimand was ever issued either to him or to other provincial authorities for insufficiently fulfilling their duties with regard to disease prevention.[65]

61. The report for 1892–93 notes that Hallen traveled 17,676 miles by rail and 685 miles by road, attended eleven horse fairs and shows, and "spent 55 days under canvas." During the course of the year he even visited Hungary to purchase stallions for breeding purposes: "Annual Administration Report of the Civil Veterinary Department in India for the Official Year 1892–3" (Calcutta: Government of India Press, 1893), 34.

62. The provincial head for Punjab, for instance, traveled 10,169 miles and visited fourteen districts and twelve fairs in 1894: "Provincial Report" (n. 8), 23.

63. "Annual Administration Report of the Civil Veterinary Department in India, 1893–4" (n. 58), 81.

64. "Annual Administration Report of the Civil Veterinary Department in India, 1894–5" (Calcutta: Government of India Press, 1895), 115. See also "Provincial Report" (n. 8), 36.

65. In his report during the year 1894–95, for example, the superintendent for North Punjab noted that "beyond collecting and compiling statistics on the various forms of cattle disease in the North Punjab, I have done little with regard to the actual direction of the numerous measures taken to suppress cattle disease, any time being wholly taken up in horse-breeding": "Annual Administration Report of the Civil Veterinary Department of India, 1895–6" (Calcutta: Government of India Press, 1896), 137.

From provinces like Madras came even clearer expressions of disinterest or defeat, with the report for the province noting frankly, "No action was taken as regards the treatment of cattle as the government have given up at present all efforts in that direction."[66] Though a short didactic discussion about the general benefits of disease control measures for the hapless peasants followed this unusually forthright admission, the inspector general was himself fully aware, through his mammoth tours, of the huge burden of breeding operations. In this sense the creation of the Civil Veterinary Department made little concrete difference, at least during the initial years, to the manner in which cattle diseases were treated. What made the situation worse was that, since the department was ostensibly formed in the larger interest of the cultivators, the latter were expected to make certain financial contributions toward it. The inherent unfairness of this arrangement was admitted by the more conscientious veterinary officials, who pointed out that resources garnered through such measures were being diverted entirely toward military ends.[67]

What is interesting to note here is that while in India veterinarians had to work under military authority while performing their duties, in Britain it was the practitioners of human medicine who stole the limelight away from farriers.[68] Veterinary medicine was therefore constantly sandwiched between either the military or the medical and failed to develop its professional identity at any considerable pace; this was especially true of the subcontinent, where colonial exigencies twisted the profession out of shape to such an extent that even its primary functions and tasks were completely redefined. Budgetary allocations and expenditure patterns in

66. "Annual Administration Report of the Civil Veterinary Department of India, 1894–5" (n. 64), 120.

67. The superintendent of the Civil Veterinary Department in Punjab noted in 1898 that "from the standpoint of the people of Punjab horse-breeding is of very secondary interest compared with the vitally important question of . . . cattle disease. They contribute through the District Boards no inconsiderable sum for Veterinary Boards and when the Civil Veterinary Department was first constituted hopes were raised that at last the agricultural stock of the province would receive some care and attention. These hopes have been fulfilled to only a small extent as the time of the superintendents has been fully taken up . . . with horse and mule breeding": "Annual Report of the Civil Veterinary Department of Punjab for the Year 1897–8" (Lahore: Civil and Military Gazette Press, 1898), 5.

68. Michael Worboys notes that "aspersions about their learning and competence [of veterinarians] were often made by medical practitioners, who would distance themselves from the 'horse doctors.'. . . While medical men vigorously policed the encroachment of veterinarians into human medicine, they made many incursions the other way, for example during the cattle plague." "Germ Theories of Disease and British Veterinary Medicine, 1860–1890," *Med. Hist.* 35, no. 3 (July 1991): 308–27, quotation on 315.

the Civil Veterinary Department affirm this fact, with nearly one-third of the total amount being earmarked for importing stallions from abroad.[69] Add to this the cost involved in supervising, encouraging, and conducting breeding operations, and we are left with very little for other expenses such as treatment of "public cattle" or prevention of epizootics.

The behemoth of breeding therefore sucked in substantial resources, leaving little for other equally essential services. What is paradoxical in this context is that though numerous measures had been tried to reduce or transfer the cost of breeding since the earliest days of the colonial cavalry, all of them ended up doing the exact opposite. Autonomous government studs, for example, failed to produce horses in the quantities needed and were still supported for a number of years at considerable expense to the treasury. In another failed experiment, horse fairs and shows were encouraged in several districts and prizes were offered to stimulate small independent breeders, yet these fairs in many instances ended up becoming hot spots for powerful horse dealers and their conglomerates.[70] Large tracts of land in the Punjab were also distributed among cavalry men in the hope that they would encourage breeding practices, but the primary motivation of these land-hungry "peasants in uniforms" was at complete variance with those of their colonial masters, leading to inadequate returns and a rather feudalistic system of fines and punishments.[71] As a result of these failed measures, the Civil Veterinary Department was forced to spend a major slice of its budget on importing stallions in a bid to kick-start internal breeding operations. What it failed to reckon with was the fundamental issue of Indian peasants being cattle rather then equine dependent, and unless this fact was altered no substantial breakthrough was possible. However, an obsession with immediate horse-breeding mea-

69. In 1895 for instance, out of a total budget of 431,229 rupees for the Civil Veterinary Department, 137,479 rupees was spent on importing stallions: "Annual Administration Report of the Civil Veterinary Department in India, 1895–6" (n. 65), 97.

70. When these fairs and shows grew to a substantial size, they were sometimes besieged by horse dealers. At Batesar, for example, nearly ten thousand horses were brought annually, and it acquired such an infamous reputation as a "dealer's fair" that other fairs that appeared to be following the same trend were sometimes called the "Batesar of the province." "Annual Administration Report of the Civil Veterinary Department of India, 1894–5" (n. 64), 32.

71. Imran Ali discusses this measure extensively and notes that "in Jhelum colony, military interest was much more obtrusive. The dominant factor in colonisation here was the horse-breeding scheme. Military grantees . . . [obtained] about 18 per cent of the total allotted land. Initially, an area of 44,000 acres was allocated for them, but this was raised to 80,000 acres with the adoption of horse breeding. The increase went largely to cavalry-men, who were expected to do well as horse breeders." *The Punjab under Imperialism, 1885–1947* (Princeton, N.J.: Princeton University Press, 1988), 113.

sures precluded the possibility of considering the larger picture, of which cattle preservation and agrarian production were parts.

Cattle upkeep was in fact so far removed from colonial concerns that it hardly ever received a passing mention: the Army Veterinary College at Poona, quite understandably, focused solely and exclusively on equine illnesses, while veterinary officials themselves showed little interest in diseases such as rinderpest even though their contagiousness was fully and unreservedly accepted by most practitioners.[72] Such was the lack of discussion on the subject that the Punjab government decided, in 1883, to create awareness by publishing and circulating a short compilation of remedies that had been tried within the province at some point.[73] However, this tract succeeded only in highlighting the existing confusion on the subject by carrying conflicting opinions about the usefulness of disease control measures; it also did not dwell for long on the subject of effective and authoritative treatments for diseases.[74] Some officials did indeed appear to have countenanced a reformist ideology and advocated wide-ranging measures such as quarantines or strict segregation, but their contentions were invariably defeated through appeals to either metropolitan science or Hindu superstition. It was argued, on the one hand, that any measure that fell short of the policy of destroying infected cattle—the predominant method of dealing with cattle plague in Britain—would be inadequate and useless; on the other hand, it was feared that strict measures for infected cattle would militate against Hindu beliefs, leading to widespread disquiet. While it is certainly rather ironical that these two seemingly opposite poles of scientific rationality were evoked for a common cause in such discussions, together they served to perpetuate the inertness that already defined colonial veterinary policies.[75] In this context it is hardly surprising

72. As early as 1871 the Cattle Plague Commission noted in the context of rinderpest that "diseased animals are the principal agency of the propagation of this disease." "Report of the Commissioners" (n. 54), xix.

73. "Selections from the Records of the Government of the Punjab and Its Dependencies: Treatment of Cattle Disease in the Punjab," new series, no. xx (Lahore: Punjab Government Secretariat Press, 1883).

74. The only remedy prescribed for rinderpest was the following: "Whilst ill, an animal should be given as much sattoo gruel in lieu of water as he will drink. When in a weak condition he should be given: native wine—2 ozs, chiretta—2 drs, Gruel—1 pint." Circular titled "Treatment of Cattle Diseases in Punjab," dated June 16, 1879: "Selections from the Records of the Government of the Punjab" (n. 73), 1.

75. These two arguments were often put together. For example, the secretary to the government of Punjab argued that "the experience gained in western countries shows that nothing short of the extermination of the diseased cattle is sufficient to eradicate the disease in its virulent forms. The lieutenant governor is unable to propose so stringent a measure

to see that even in the first decade of the twentieth century pamphlets issued on the subject of cattle diseases mentioned only basic precautions such as segregation, disinfection, regulation of the infected cattle's diet, and proper burial of carcasses.[76]

In writing about colonial neglect of epizootics, we do not wish to present a picture of the peasant as the supine victim of colonial policies. Indeed, partly due to the absence of state provisions for curing cattle disease, cattle owners all over northern India continued to use various extremely popular indigenous remedies and preventive measures. For instance, the most common treatment for foot-and-mouth disease involved keeping the cattle standing in muddy water, which prevented flies from hovering over the blisters or wounds. Various astringent barks such as babool (*Acacia nilotica*) were also applied in some places.[77] Similarly, in case of a rinderpest infection, though the disease was widely perceived as being incurable, cattle were fed rice gruel or soft food, and their shelter was fumigated with resins. In fact, cultivators also adopted several sanitary precautions on their own, without the benefit of any helpful advice from state authorities. Richer cultivators or landlords, for instance, did not allow their cattle to graze in the open fields due to the likelihood that they could acquire rinderpest from other animals in their vicinity.[78] In case of diseases such as quarter ill, too, cattle were constantly moved from place to place with a view to giving them exercise and preventing the onset of lameness. There was therefore a distinct awareness of the various varieties of cattle disease and the cures for them, so much so that cattle were bred selectively keeping in mind not only their potential size, strength, and productivity but also their resistance to diseases.[79]

## The Makings of a Colonial Science: Veterinary Research and Training in India

Besides these notions, there was also a belief in the protective power of the first disease attack, especially in case of rinderpest. In India, official sources tell us, there was apparently a widespread and strong "native"

for adoption in the Punjab. The prejudices of the people would be an effectual hindrance to the adoption of such a measure." Dated March 2, 1882, "Selections from the Records of the Government of the Punjab" (n. 73), 11.

76. Eastern Bengal and Assam, veterinary leaflet nos. 1–4, 1909, OIOC, V/25/541/29, 2.

77. "Report of the Commissioners" (n. 54), xiv.

78. Ibid., 168.

79. Nitya S. Ghotge, *Livestock and Livelihoods: The Indian Context* (Delhi: Foundation Books, 2004), 25.

belief that "salted" animals were blessed with future immunity.[80] Similar beliefs existed in other parts of the world, and it has been reported that animals were sometimes deliberately exposed to disease in order to confer immunity upon them.[81] Even the Cattle Plague Commission accepted the fact that such beliefs were based on sound principles, noting that "there can be no doubt about the protective power of one attack of rinderpest"; what the commissioners were far more skeptical of was whether a deliberate attempt to induce a mild form of the disease would necessarily succeed in all instances.[82] Despite the commission's doubts, it is quite possible that on occasion the practice of nonsegregation of animals during epizootics, repeatedly and quite vehemently criticized by colonial officials as a symptom of "native" ignorance and apathy, was actually a calculated strategy to protect cattle against future scourges. In this sense Indian peasants showed the way to frontline colonial scientists, who began to accept the concept of immunity for animals as a viable strategy only at the very end of the nineteenth century, by which time "bacteriomania" had already gripped Britain and continental Europe.[83] It was only in the wake of Koch's stunning demonstration of the tubercle bacillus in Germany on March 24, 1882, that the Indian government began to show a sneaking interest in the new science of bacteriology; J. H. B. Hallen, the most trusted and influential veterinarian in India, was consequently sent on a trip to Pasteur's famed laboratory in Paris to learn the art of vaccination.[84] He returned to India a fully converted man eager to preach the gospel to his

80. "Report of the Commissioners" (n. 54), xxiii.

81. See, e.g., Richard Waller, "'Clean' and 'Dirty': Cattle Disease and Control Policy in Colonial Kenya, 1900–40," *J. Afr. Hist.* 45 (2004): 45–80, quotation on 49.

82. The report asked rather rhetorically, "[C]an the practice of vaccination be initiated, and a trivial non-fatal disease be induced preventing against the serious and more fatal one? To this we must reply emphatically in the negative." "Report of the Commissioners" (n. 54), xxiii.

83. The term *bacteriomania* was coined by Abraham A. Jacobi, an American practitioner who was opposed to the new craze for discovering germs: Carla Bittel, *Mary Putnam Jacobi and the Politics of Medicine in Nineteenth-Century America* (Chapel Hill: University of North Carolina Press, 2009), 186. See also Nancy K. Tomes, "American Attitudes towards the Germ Theory of Disease: Phyllis Allen Richmond Revisited," *J. Hist. Med.* 52 (January 1997): 17–50, quotation on 42; Michael Worboys, "Was There a Bacteriological Revolution in late Nineteenth-Century Medicine?" *Stud. Hist. Philos. Biol. & Biomed. Sci.* 38 (2007): 20–42, quotation on 27.

84. Hallen notes that "while in England I received instruction from the Indian Office explaining to me that before returning to my duties I should visit Monsieur Pasteur's laboratory in Paris, with the view of learning the method of vaccinating cattle. . . . I proceeded there on the 5th September 1884, on the visit of enquiry." Letter dated December 6, 1884, OIOC, L/MIL/7/840.

colleagues and the government, but his glowing reports and enthusiastic endorsement did not lead to immediate measures.[85] Keen to expand his sphere of influence, Pasteur himself showed a great proselytizing zeal in his correspondences with the India Office. In a letter to them he noted that he was even "prepared to bear the expense of establishing suitable works in India, and to find properly qualified officials altogether at his own cost until the remedy is well established in the several presidencies."[86] However, despite such proposals from Pasteur himself and in spite of its own initial interest in the new science, the colonial government was quite circumspect in adopting measures that had been widely endorsed within Europe. Even the anthrax vaccine, which arguably provided Pasteur with his finest hour, was not given full and unreserved approval by Indian authorities—tests were in fact carried out to ascertain its efficacy.[87] In the end, partly because of these debates over its usefulness and partly because anthrax itself was variously and imprecisely defined in the subcontinent, the vaccine was never extensively adopted.[88] What could have also partly worked against it was that the vaccine had been developed and demonstrated by Pasteur in the context of sheep—not a very significant animal in the military context—which could have created doubts about its relevance for horses.

Despite such lukewarm reception, the science of bacteriology received approbation from the highest authorities as it could potentially lead to great cost and energy-saving discoveries such as cheap vaccines. The veterinary head for Punjab, for instance, despaired of any immediate hope of suppressing rinderpest outbreaks through public health measures and looked toward colonial bacteriologists for a magic cure that would eradicate the disease. Writing in 1899 with a sense of anticipation of some impending discovery, he noted,

85. In his report, Hallen noted that "animals duly vaccinated with the attenuated virus, as prepared in professor Pasteur's laboratory . . . become protected from anthrax. This boon should now be extended to India, where anthrax in many forms attacks animals." Dated December 6, 1884, ibid.

86. Letter dated October 11, 1886, ibid.

87. Dr. Klein, the doyen of British bacteriology, conducted experiments at the Brown Institute in London, where he concluded that that the preparations made in the laboratory of M. Pasteur and sold to the public by his agent in Paris were not uniform in quality: *Brit. Med. J.*, May 31, 1884. Quoting this report, an official concluded that "probably the conditions of manufacture of a true attenuated anthrax virus are numerous and are not all understood even by M. Pasteur himself." Letter to the adjutant general, OIOC, L/MIL/7/840.

88. For the various definitions of the disease and the confusion around it, see Civil Veterinary Department, "Ledger Series No. II, Subject: Anthrax" (Calcutta: Government Printing, 1894), OIOC, V/25/541/1.

> I have been informed that before long an immunising agent for inoculation will be ready for use and, if successful, given a sufficient staff, an incalculable amount of good should follow its use, but, until then, I hope you will see that the effects of this disease in this country as in other countries are practically out of our hands.[89]

He was perhaps referring to the new "antiserum" for the disease that Alfred Lingard, the imperial bacteriologist, claimed to have discovered at the Muktesar laboratory in 1899.[90] The central government had already approved Lingard's claims and had shown considerable alacrity in producing the prophylactic, so that within a decade of its introduction nearly half a million doses were being issued annually.[91] However, though the uptake was quick, it must be pointed out that the cause of the rinderpest vaccine had not initially been at the top of the bacteriological agenda partly due to reasons explored in preceding sections—it received a massive boost only due to Koch's visit to the laboratory in 1897, when he tried to conclusively prove his own bile treatment for the disease.[92] Such was the reputation of these eminent metropolitan scientists that their visits galvanized the entire medical establishment and shuffled its priorities. Koch had by this time become the definitive authority on all things bacteriological and received a suitably deferential treatment in India, with the entire staff of the laboratory devoting nearly six weeks exclusively toward organizing and conducting his trip.[93] Lingard's conversations with Koch also became the basis for demanding an expansion of the laboratory premises and facilities, which were granted by the colonial government.[94] Such episodes

89. "Provincial Report for the Civil Veterinary Department of Punjab for 1898–9" (Lahore: Civil and Military Gazette Press, 1899), 4.

90. Dr. Lingard was a Welshman who was appointed as the imperial bacteriologist in 1890 at the Imperial Bacteriological Laboratory, which was initially located at Poona. The laboratory was subsequently moved to Muktesar in the United Provinces, where it was eventually renamed the Indian Veterinary Research Institute. Lingard acted as the head of the laboratory until 1908: Major J. D. E. Holmes, *A Description of the Imperial Bacteriological Laboratory, Muktesar: Its Works and Products* (Calcutta: Superintendent Government Printing, 1913).

91. Percival Hartley, "The Imperial Bacteriological Laboratory, Muktesar, India," *Nature*, April 9, 1914, 137–38; see also Holmes, *Description of the Imperial Bacteriological Laboratory* (n. 90), 25–26.

92. This treatment involved injection of bile from an infected animal to a healthy one in order to confer immunity. Koch had claimed great success with this method during the course of extensive trials that were conducted in the Cape Colony, and his trip to India followed quick on the heels of his experiments in Cape Colony: *Friend of India and Statesman* (Issue 42), October 20, 1897. See also Daniel Gilfoyle, "Veterinary Research and the African Rinderpest Epizootic: The Cape Colony, 1896–1898," *J. Southern Afr. Stud.* 29, no. 1 (2003): 133–54.

93. Lingard, "Preliminary Note on Rinderpest," OIOC, V/27/541/20, 1.

94. Ibid., 10.

make it clear that the authority and opinion of an acknowledged expert from the "core" were valued immensely in the "peripheries," and this was reflected not just in the deference accorded to them but also in the unreflexive adherence to their hypotheses.[95] Keeping this in mind, what was surprising about Koch's Indian trip was that it did not greatly expand the number of Indian adherents to his bile theory—Lingard in fact filed a negative report on his experiments at Muktesar,[96] while the principal of the Lahore Veterinary College made the rather guarded comment that "[i]t is, perhaps, too early yet to give an opinion; in its present form it is rather unwieldy, and would only be applicable to certain cases, in which, however, it might be extremely useful should it prove efficacious."[97] Such negative assessments might partly have been occasioned by the inconclusive nature of the experiments themselves, but they also reflect a degree of confidence and self-assuredness among Indian researchers.[98] Be that as it may, Koch's visit did create great interest in the subject of rinderpest vaccines and, at least temporarily, took the spotlight away from equine diseases. Lingard's vaccine followed from this temporary shift in priorities, and from his decision to briefly relinquish his research on surra following Koch's sojourn.

Guided by the interests of Lingard, the laboratory had, since its formation in 1890, kept surra at the center of all its inquiries. During the first few years at least, when the establishment was relatively small, it was possible for him to dictate the overall direction of research activities, and this comes out clearly in the annual reports that focus entirely on surra.[99] The institute's preoccupation with the disease was, however, not

95. Paul Cranefield shows a striking instance of this in the case of east coast fever, where Koch's claims led to a derailment of local investigations despite doubts to the contrary: *Science and Empire: East Coast Fever in Rhodesia and the Transvaal* (Cambridge, UK: Cambridge University Press, 1991), 22–51. See also Karen Brown, "Tropical Medicine and Animal Diseases: Onderstepoort and the Development of Veterinary Science in South Africa 1908–1950," *J. Southern Afr. Stud.* 31, no. 3 (2003): 513–29. Brown argues that while peripheral scientists were very deferential during the initial years of bacteriological investigations in the region, they had become far more confident and independent about four decades later.

96. After detailing all the experiments carried out by Koch in his report, Lingard reached the conclusion that "the experiments commenced at Muktesar, under the supervision of Professor Koch to ascertain the value of rinderpest bile as a protective agent against that disease in India, have up to the present proved very little." Lingard, "Preliminary Note on Rinderpest" (n. 93), 10.

97. In *Friend of India and Statesman* (Issue 42), October 20, 1897.

98. Koch faced many practical difficulties during the course of his experiments in India, chiefly his inability to find and preserve infected rinderpest blood.

99. In 1895 the institute consisted of a laboratory main building, a postmortem house, two outhouses, one cattle shed, a bungalow for the assistant bacteriologist, and an out-kraal

merely the product of individual interest or involvement: its research activities had to be, after all, approved and ratified by higher authorities. Even before the laboratory's inception, stray instances of individual bacteriological work reveal a marked inclination toward equine illnesses that were significant from a military standpoint. The career of Griffith Evans, a Welsh veterinarian who had been deeply inspired by Pasteur's anthrax demonstration in 1876, provides an instance of this overarching military orientation. Immediately after Pasteur's discovery, Evans had requested permission from the colonial government to carry out his own bacteriological investigations on anthrax in horses, but his request had been summarily dismissed as anthrax was not considered excessively fatal in horses. Luck was soon to favor him though in the form of the Second Afghan War, which broke out in 1880. During this campaign British cavalry regiments suffered huge losses through surra, and Evans was immediately dispatched to study the disease.[100] Using the superior bargaining position that had been providentially conferred upon him, Evans even succeeded in forcing a very reluctant government to allow him to inoculate healthy horses. Evans appears to have seen this as a rare and career-defining moment, and threw himself energetically into the task of collecting blood samples and studying them under his microscope. Soon enough he made the triumphant announcement that he had discovered the microbe responsible for surra and even claimed success in transferring the disease into healthy horses,[101] thereby satisfying Koch's postulates even before they had been explicitly formulated.[102] However, quite in contrast to the great reception accorded to Koch's claims and postulates, Evans' announcements were greeted with great official antipathy, and he was in fact shunted from Bengal to insignificant stations in Burma and Madras. Writing of his inglorious fate, R. F. Montgomerie noted rather colorfully in an obituary published in the *Veterinary Record*,

for cattle. The staff consisted of the imperial bacteriologist, the assistant bacteriologist, one native laboratory assistant, three clerks, one artist, and some menials. Holmes, *Description of the Imperial Bacteriological Laboratory* (n. 90), 1–7.

100. A. Murray Fallis, "Griffith Evans 1835–1935: Discoverer of the First Pathogenic Trypanosome," *Can. Vet. J.* 27 (1986): 336–38. See also "Presentation of the Mary Kingsley Medal to Dr. Griffith Evans," *Ann. Trop. Med. Parasit.* 12 (1918): 1–16.

101. Fallis, "Griffith Evans" (n. 100).

102. Koch came up with his four postulates in 1884 in the wake of his tuberculosis demonstration, and they quickly became the touchstone on which any new claim of a discovery was tested: Andrew Cunningham, "Transforming Plague: The Laboratory and the Identity of Infectious Disease," in *The Laboratory Revolution in Medicine*, ed. Andrew Cunningham and Perry Williams (Cambridge, UK: Cambridge University Press, 1992), 209–44.

> So far as India was concerned at that time, Evans might as well never visited Dera Ismail Khan [*sic*], never had seen a case of surra, never had discovered Trypanosome evansi. When Evans came to place on record the reasoning which brought him to regard microbes as pathogenic rather than as forms developing in blood diseased through some chemical change, his light shone with real brilliance. . . . Yet officially he was hounded for his views. He was regarded as a crank. He was forthwith sent from Bengal.[103]

While we are not privy to the inside story behind the squalid treatment meted out to Evans, it is quite probable that his insistence on experimenting with prized war horses did not exactly endear him to military authorities. His firm adherence to this position at a time when there was very little consensus on the value of bacteriology within Indian medical circles must also have contributed significantly to his troubles. By the time Lingard was appointed as head of the imperial laboratory, however, the situation had improved somewhat as a result of the overwhelming European trend in favor of bacteriology, which had had some impact on the colonial mind. Despite this greater flexibility, however, Lingard's remit was clearly defined—throughout his tenure he focused largely on equine diseases, apart from the short digression into rinderpest following Prof. Koch's visit.[104] What is equally interesting is that even human diseases appear to have merited little bacteriological attention during these early years, despite compelling European developments in the field. Keeping these issues in mind, it could be argued with some justification that in the colonial Indian context laboratory medicine ended up playing second fiddle to superior military interests, and that the new science was perceived chiefly as a tool for cutting down future losses to the cavalry.[105] This survey of bacteriological research therefore reinforces the point we made earlier—that military requirements were the guiding force behind veterinary policies at least until the end of our period. As a result, colonial

103. R. F. Montgomerie, "Griffith Evans," *Vet. Rec.* 15 (1935): 890–94, quotation on 893. It was nearly three decades after his investigations at Dera Ismail Khan that Evans' breakthrough began to be recognized and he began to receive several felicitations and awards, including the Mary Kingsley Medal from the Liverpool School of Tropical Medicine and the Henry Steel Medal from the Royal Veterinary College. In Pamela Hunter, *Veterinary Medicine: A Guide to Historical Sources* (Aldershot, UK: Ashgate, 2004), 214.

104. That Lingard and the Imperial Laboratory returned to their preoccupation with surra after a brief foray into rinderpest is quite evident in the annual issues of the "Report of the Imperial Bacteriologist" published after 1901.

105. This was true at least during the initial years. A more detailed study of bacteriological work at the imperial laboratory during the post-1900 period is needed in order to locate changes in research priorities.

veterinarians took much longer to rid themselves of military fiats than their counterparts in the field of human medicine did.

While this strong and abiding association with the military led to the relative neglect of civilian cattle by the rather inappropriately named Civil Veterinary Department, it also had major implications for the nature of veterinary training within the colony that failed to expand significantly due to the restricted demand for veterinarians in civil employ. Since the major chunk of army veterinarians in India was supplied through the "British quota system" and there was negligible demand for experts in purely civilian posts, training and producing new recruits in large numbers was not at the top of the colonial agenda. The situation was not radically transformed with the creation of the Civil Veterinary Department, as all its senior staff were recruited from the army.[106] Subordinate officers were also not in great demand, except perhaps in Burma, which stood out for having a substantial staff of veterinary assistants working directly under the supervision of the provincial veterinary officer.[107] Burma in fact was such an exception that each installment of the annual report of the Civil Veterinary Department carried extensive quotes and statements from the provincial officer, which partly served the function of camouflaging the striking degree of inactivity in other provinces. In such a scenario employment opportunities for "native" farriers were obviously limited, which in turn led to a lack of demand for whatever training opportunities were available in India. Making a note of this unabashedly employment-seeking behavior of "natives," the first report of the Bombay Veterinary College in 1886 identified it as a major obstacle in the advancement of colonial science.[108] It was quite another matter, of course, that the question of emoluments for British veterinarians serving in India was raised and debated almost every year.

106. The initial sanctioned strength of the Civil Veterinary Department in 1892 was only eighteen, and all of them were recruited from among army veterinary officers serving in the subcontinent. OIOC, L/MIL/7/862. Recruits from the army were preferred due to a general consensus within the Indian establishment that the British recruits were invariably young and inexperienced and therefore not very useful. Lieutenant Seager, for instance, noted in his letter in 1860, "At home, almost anyone is considered good enough to export to India." Letter dated October 5, 1864, OIOC, L/MIL/7/902.

107. "Annual Administration Report of the Civil Veterinary Department in India, 1894–5" (n. 64), 110.

108. He noted, "I am sorry to say that very few have entered through any special liking either for their future profession or for domesticated animals but almost all because they consider the profession will give fair prospects of employment." "Report of the Bombay Veterinary College, 1886" (Bombay: Government Central Press, 1887), 3.

In his subsequent reports, J. H. Steel showed greater sympathy for his students—perhaps this was the result of a greater familiarity with their economic situation. He even went to the extent of criticizing the government for not providing suitable opportunities, and expressed his dissatisfaction with the degree of change wrought by the creation of the Civil Veterinary Department, noting,

> Unfortunately, the prospects held out to the graduates are too poor to attract the better class of men in larger numbers than at present. The organisation of the Civil Veterinary Department was looked forward to by the graduates and the students as a means of bettering their prospects and improving their status . . . but these hopes are not likely to be realised.[109]

Despite these initial hiccups, the employment situation for graduates began to show some signs of improvement in the mid-1890s. This was primarily due to the growing number of rather rudimentary veterinary dispensaries in Punjab and Bombay, where veterinary assistants were absorbed at a nominal salary.[110] What is equally interesting is the growing demand for Indian veterinary graduates in other colonies, which must have added considerably to the lucrativeness of the profession. By the year 1900, for instance, more than seventy graduates of the Lahore Veterinary College—which was established exactly half a decade before its counterpart in Bombay and imparted training in the vernacular—were employed all over the empire.[111] Despite this gradual amelioration in employment prospects, there was little corresponding expansion in training facilities, except perhaps for the creation of the Calcutta Veterinary College in 1893—a measure that had been contemplated for nearly a decade before it was eventually approved.[112] A committee headed by J. H. B. Hallen had strongly advocated for this college as early as 1883, but the

109. The likelihood of greater employment in the Civil Veterinary Department was low because, noted Steel, "the government have been pleased to decide . . . that the graduates to be employed in the Civil Veterinary Department will not be enrolled as servants of Government entitled to the privilege of pension, &c., but will be considered as employees of the Local Boards concerned." "Report of the Bombay Veterinary College, 1890" (Bombay: Government Central Press, 1891), 2.

110. In 1894 there were a mere five veterinary dispensaries in Punjab, in 1897 the number grew to seven, in 1898 it had reached the figure of ten, and by 1900 there were thirteen dispensaries in all of Punjab. "Provincial Reports of the Civil Veterinary Department, Punjab" (Lahore: Civil and Military Gazette Press).

111. By the end of this year, fifty men had been sent to Transvaal, twenty had been sent to China, and some had been sent to Uganda as well. "Provincial Report of the Civil Veterinary Department, Punjab, 1900–01" (Lahore: Civil and Military Gazette Press, 1901), 4.

112. Letter from P. Nolan, dated May 25, 1886, OIOC, L/MIL/7/845.

idea had been turned down, citing certain financial constraints, which is somewhat strange and perplexing considering that these same financial constraints had been conspicuously absent just two years previously when the Lahore Veterinary College was created. Perhaps the key to this riddle lies in the original impulses behind both proposals—while Lahore was a response to the huge losses suffered by the cavalry during the Second Afghan War, the Calcutta proposal was motivated by larger philanthropic ideas aimed at the general public.[113] Clearly then the losses suffered by the cavalry rankled and motivated the government to a much greater extent than losses to "public cattle." Both veterinary training and research were in this sense closely aligned with military interests until the end of our period, and this reflects some of the general trends that we have discussed in the previous sections. Taken together, the various strands of this broad survey of veterinary developments suggest certain modifications in the existing historiographical consensus about the nature of colonial medicine in India in the late nineteenth century.

## Conclusion

This article has broadened the definition of colonial medicine to include veterinary medicine within its fold—an area that has been largely ignored by historians of medicine. Roy Porter, writing in the context of British veterinary medicine, has made the significant observation that "in the academic world, it is automatically assumed that a 'historian of medicine' is a person who works on the history of *human* medicine. . . . One unhappy aspect of this is an appalling dearth of significant writings on the history of British veterinary medicine."[114] This observation is equally true nearly two decades after it was first made and holds greater validity in the South Asian context where no full-length study of the subject exists. This article has questioned this trend and shown that a change in perspective could lead to several fresh observations that could potentially reformulate existing hypotheses about colonial medicine that have been arrived at solely through studies of human diseases.

113. An official noted that "the establishment of a veterinary college at Lahore was the first serious attempt made in north India to train natives in veterinary science. This project . . . was brought to a practical issue by the experience of the Afghan campaigns, in which the security of trained farriers proved a serious inconvenience to the transport service." Letter dated July 10, 1886, to the Secretary of State for India, ibid.

114. R. Porter, "Man, Animals and Medicine at the Time of the Founding of the Royal Veterinary College," in *History of the Healing Professions*, vol. 3, ed. A. R. Mitchell (Wallingford, UK: CAB International, 1993), 19–30, quotation on 19.

The first conclusion that could be safely derived from this study is that public health—if we broaden the definition of public health to include animal diseases and epizootics within it—does not appear to have assumed great importance even at the end of the nineteenth century. While strict and authoritarian measures might have been applied in the case of epidemics such as plague, this was not really true for epizootics that broke out among "public cattle." In his extensive study of colonial medical policies, David Arnold has shown that the 1890s might have seen a transition from "enclavism" to public health with the establishment of a new "tropical medicine" that was based on the germ theory of disease and a corresponding intensification in state medical intervention in India.[115] At first glance, this appears to have held true for veterinary medicine as well, as the 1890s saw the establishment or growth of new institutions like the Imperial Bacteriological Laboratory, which laid new emphasis on the germ theory of disease. Similarly, it might be argued that state intervention into veterinary medicine increased during this decade through the establishment of the Civil Veterinary Department. However, these new institutions did not mark a decisive break with the immediate past—for instance, the Civil Veterinary Department merely took over and streamlined preexisting horse-breeding structures and paid very little attention to the question of epizootics among "public cattle." Also, purely in terms of budgetary allotments, the department spent very little toward disease prevention and invested most of its resources on horse-breeding measures. Similarly, though the creation of the Imperial Bacteriological Laboratory was a notable step, it continued to conduct research primarily on diseases affecting horses. Keeping all these qualifications in mind, it would appear that the measures taken for preventing cattle diseases did not reflect the larger trend toward greater investment in public health during the past two decades of the nineteenth century.[116]

Military and economic compulsions were the two major forces that drove veterinary administration into the direction that it took. Already overburdened by the massive weight of military duties and breeding expenses, veterinarians were left with little appetite to venture into medical issues of fundamental importance to peasants. In this sense, despite the various changes that occurred throughout the period of this study, the department retained the contours that had been drawn during its

115. Arnold, *Colonizing the Body* (n. 50), 13.

116. Mark Harrison notes in this connection that "in the late-1880s, government expenditure on public health began to rise as expenditure on other public works began to fall." *Public Health in British India* (n. 50), 201.

foundational years in the last decade of the eighteenth century. From the days of Moorcroft to those of Hallen and Lingard, Veterinarians constantly struggled to broaden their operations but were met with obstacles in the shape of military dictates and financial ledgers. The autonomous expansion of the department was also hindered through association with the mother country, though counterparts in Britain argued that metropolitan association was of absolute essence if Indian experts were to make use of the latest breakthroughs in the field.[117] These issues were, of course, not specific to veterinary medicine—they did indeed make the presence felt within other areas of colonial administration. However, what lends a degree of uniqueness to the history of veterinary medicine in India is the much more prolonged impact of these issues, leading to developments that were not in perfect synchrony with those in closely allied fields. The colonial official also appears to have been much less imbued with the "white man's burden" when it came to preserving indigenous cattle stock: perhaps the notions of charity and philanthropy could be set aside with much greater ease in this case than they could be, for example, in the case of human health. In this sense veterinary history allows us to study the nature of the colonial state with greater clarity, shorn of much of the justificatory baggage that was necessary to retain its positive and "improving" self-image.

The trends outlined in this essay, however, were more strongly visible until the end of the nineteenth century—the nature of veterinary medicine in India changed considerably during the early part of the next century due to several historical circumstances. The first of these was the declining usefulness of the cavalry, especially in the wake of the First World War, as a result of which veterinary officials became less preoccupied with horses.[118] This shift away from the military was also aided by several autonomous trends within India, including the association of the Civil Veterinary Department with the Agricultural Department, the formation of several bacteriological laboratories (like the Pasteur Institutes in Shillong, Coonoor, and other places and the laboratory at Sohawa),

117. J. Collins, the principal veterinary surgeon in Britain, noted in 1881, "It is a fact that all discoveries with regard to special Indian [bovine] diseases . . . have either originated in England, or have been carried out by men fresh from England. . . . It was only the other day that a well known disease peculiar to India, viz. 'bussatti' was clearly demonstrated by a young veterinary surgeon who had never been in India at all!" Letter dated November 17, 1881, OIOC, L/MIL/7/832.

118. In the wake of the First World War, larger cavalry regiments in India were amalgamated into single units in 1922. Though the last of the cavalry charges took place during the Second World War, the usefulness of these regiments began to decline earlier.

and the introduction of inoculation programs.[119] The increasing emphasis on treating epizootics and cattle diseases is reflected in the appointment, by 1911, of five inspectors, sixty-two veterinary assistants, and twenty-six veterinary dispensaries at district headquarters in the province of Bengal alone.[120] Any inquiry into twentieth-century developments would therefore need to take these trends into account, and we would argue that a decisive break in the nature of Indian veterinary administration took place in the early part of the twentieth century.

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119. *Brit. Med. J.* 2, no. 3480 (September 17, 1927): 513–14.

120. Article titled "The Bengal Veterinary Department," *Brit. Med. J.* 1, no. 2625 (April 22, 1911): 964.