

# Of Viruses and Men

*by Cynthia Colmellere*

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**At the frontiers of epidemiology and social history, Delphine Berdah compares the very different health policies implemented in France and the United Kingdom in the fight against tuberculosis and foot-and-mouth disease.**

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About: Delphine Berdah, *Abattre ou vacciner, La France et le Royaume-Uni en lutte contre la tuberculose et la fièvre aphteuse (1900-1960)*, Paris, Éditions de l'EHESS, 2018, 352 pp., €26.

In this book, the historian Delphine Berdah explores the history of two contagious diseases, tuberculosis and foot-and-mouth disease, and their control in two neighbouring countries, France and the United Kingdom. Today, these diseases are subject to the same prophylactic measures in animals: screening, isolation, slaughter and disinfection of premises. However, this has not always been the case. Vaccination has been widely used to treat these diseases, but in very different ways in the two countries. As early as the 1920s, the French government chose to vaccinate humans and animals against tuberculosis. The vaccination of cattle was abandoned in favour of slaughter in the 1960s. There was widespread vaccination of animals against foot-and-mouth disease between 1937 and 1957. Before that date, sick animals were isolated and the premises disinfected. From 1957 onwards, culling became the norm once again until vaccination was reintroduced as a compulsory measure from 1961 (until 1991). In contrast, between 1900 and 1960, the British authorities favoured the isolation and slaughter of animals to combat both diseases. These standards have changed very little to the present day. Animal vaccination has remained very intermittent and BCG was only administered to the population after the Second World War.

Based on thorough and rigorous archive work, Delphine Berdah reconstructs the debates and controversies that led to the adoption of different sanitary and veterinary policies in these two countries. The book deals with the period from 1900 to 1960, but is part of a longer history of epidemic control and eradication because “although the sanitary slaughter of animals now seems to be the norm in our western countries, many medical prophylaxes (vaccinations, serotherapy, inoculations) have been widely implemented throughout the world, particularly since the end of the 19th century.” (p. 13). Through the process of vaccine development, the historian explores the relationship between human and veterinary medicine and makes tangible the porous limits between humans and animals. In the midst of a global epidemic of the Covid-19 virus—which is transmitted from animals to humans—when confinement and physical distancing are widely favoured and research is exploring the potentially protective role of vaccination against BCG, these analyses seem particularly topical. As Delphine Berdah states:

“The recent history of our understanding of human and animal epidemics and the surveillance and preparation systems set up to prevent the "microbial storms" that make infected people so terribly contagious is evidence of the impossibility of keeping the bacteria, viruses and parasites responsible for contagious diseases permanently at bay through hygiene and slaughter, in a globalised world in which everything circulates, is exchanged, hybridised and reinvented beyond what is humanly possible to imagine.” (p. 306).

## **Two Ways of Thinking on Epizootic Diseases**

Tuberculosis can be transmitted from animals to humans through consumption of contaminated milk or meat, or through prolonged contact. Foot-and-mouth disease mainly affects animals. Cases of human contamination are rare. Foot-and-mouth disease is rarely fatal when it affects livestock, but it can reoccur several times a year. These diseases pose a serious financial challenge for farmers because infected animals lose much of their economic value (e.g. through weight loss and cessation of lactation).

Following on from Ludwik Fleck’s pioneering work on the social history of syphilis, Delphine Berdah distinguishes between two country-specific *ways of thinking* in the research and implementation of effective prophylaxis against these diseases. A *way of thinking* consists of the set of norms, concepts and practices shared within a given scientific community. In the 19th century, before the introduction of the first

vaccines, the fight and control of contagious diseases was based on common rules for isolating and slaughtering animals. However, they were applied in different ways. In the UK, which has a large export trade in livestock animals, these rules are strictly adhered to thanks to a network of official veterinary inspectors. In addition, farmers receive financial compensation for slaughters. In France, where exports are lower and veterinary medicine is not very professional, slaughter is not systematic.

In the early 1920s, bovine tuberculosis was the primary animal disease in France. It affected one fifth of livestock, mainly animals destined for mass production. Scientists and politicians considered the disease to be endemic, dangerous for animals and populations, and so human and veterinary medicine focused efforts on the development of vaccines. Doctor Albert Calmette and veterinarian Camille Guérin synthesised the first vaccine strains from an attenuated tuberculosis bacillus that was named after them.<sup>1</sup> They also relied on farmers and veterinary practitioners to carry out large-scale trials to prove the effectiveness of the vaccine. Livestock farmers were very committed because they were keen to avoid the slaughter of their animals, which they also used for agricultural work. From 1921 onwards, the vaccine for the prevention of the disease in humans was tested on newborn babies. To demonstrate its safety, Calmette involved doctors who were asked to collect information on the health of the vaccinated subjects. In particular, they monitored the absence of side effects or symptoms of the disease. For their part, veterinarians performed autopsies on dead vaccinated animals to demonstrate the absence of lesions that could be linked to the injection of the attenuated bacillus.

Calmette and Guérin thus proceeded by going back and forth between human and veterinary medicine in order to respond to the criticism they faced. In France, Calmette was attacked over the safety of the vaccine in healthy newborns and “sensitive” or “weakened” subjects. The deaths mentioned remained isolated but were proven. Calmette was also accused of ignoring these facts in his statistical studies. British experts, for their part, questioned the scientific validity of his clinical trials. Moreover, Calmette and Guérin’s assertions regarding the safety of the vaccine were severely undermined by the Lübeck accident: in Germany, 76 vaccinated children died between 1930 and 1932 as a result of vaccine strains contaminated during their preparation. Nevertheless, the two specialists remained convinced of the benefits of vaccination and continued to defend it.

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<sup>1</sup> BCG: Bacillus Calmette-Guérin.

In the United Kingdom, the health authorities took an environmental approach to the disease. The identification of healthy and contaminated areas, the hygiene of individuals and their homes and the cleaning of facilities were considered paramount to control and eradicate the epidemic. According to this logic, vaccination—given that it reintroduced the disease in attenuated form—was a source of uncertainty and risk. In both countries, the issues at stake in choosing an effective prophylaxis were economic, political and health-related. How, then, can it be explained that the French government recognised the effectiveness of vaccination while the British authorities had reservations? Some of the answers to this question lie in the records of scientific evidence on which the decisions adopted in the two countries were based.

## **The Records of Evidence**

In France, the strategy of dual legitimisation led by Calmette and Guérin, combined with the weight of the Pasteur Institute, brought official recognition of the vaccine's effectiveness. Calmette collected and compiled data gathered by doctors and veterinarians whom he claimed to be objective. He also invoked the legitimacy of the Pasteur Institute and the expertise of its bacteriologists. He thus responded to those opposed to human vaccination, including the British, who used the Lübeck accident against him.

On the other side of the Channel, the health authorities rejected vaccination, based on the results of work carried out by the Medical Research Council (MRC). MRC experts combined standardised experimental protocols and tests of the vaccine substance in order to generate statistics, until they could provide evidence of its therapeutic value. The complexity of the experiments and the questions that arose caused uncertainties that jeopardised vaccination. However, in the post-war period, in order to cope with economic difficulties and high demand for food, British veterinarians carried out the targeted vaccination of part of the country's livestock, in addition to other measures such as isolation and slaughter of sick animals.

In France, vaccination of cattle was abandoned in 1963 in favour of slaughter. As the size of livestock farms increased, this change seemed justified by economic and practical conditions (separation of the calf from the mother and feeding with

pasteurised milk). In fact, the real reason lay in the reorientation of scientific policies. Following the general introduction of the BCG vaccination from 1929 onwards, among other things, the Pasteur Institute abandoned research and production for veterinary purposes in favour of substances for medical use. In the United Kingdom, on the other hand, human vaccination was suspended in the absence of sufficient evidence of its reliability in animals. It was introduced after the Second World War.

## **Foot-and-Mouth Disease, the Rationale of Vaccination in Practice**

Before the 1937-38 foot-and-mouth epidemic in France, slaughter was the established practice, but, as with bovine tuberculosis, it was not rigorously applied. Other treatments were used, including serotherapy and haemotherapy. However, with the decree of 4th February 1937 in particular, these practices were regulated. This legislation authorised only practitioners who were graduates of veterinary schools to prepare serums and products of “microbial origin.” In addition, with the increasing size of farms and the drive for profitability, many farmers lobbied parliamentary representatives and health authorities to introduce vaccination. They depended on their trade unions and professional associations for support. From 1948 onwards, vaccination became widespread, with farmers committing to five-year contracts. These measures were put in place through the professionalisation of veterinarians and the creation of a vaccine market supported by two private research institutes. However, faced with considerable criticism of vaccination both home and abroad, the government ended its support of the private institute that produced the vaccine for the entire country. Slaughter became the official guideline published in the decree of March 1957, which included the conditions under which farmers could be compensated. However, vaccination remained possible until 1961. It became compulsory between 1961 and 1991. During this period, slaughters continued to be carried out in the event of an outbreak of infection, particularly when unvaccinated and sick animals were brought into the country.

In the United Kingdom, the law requiring the slaughter of animals infected with foot-and-mouth disease dates back to 1895. Vaccination was considered a serious option just before the Second World War, to counter the possible use of bacteriological weapons by the Germans. The 1951-52 epidemic accelerated the movement.

Industrialists produced vaccines resulting from public research to meet national demand but also to sell them abroad and thus guarantee the import of protected animals. However, slaughter remained the norm in the UK. As was the case with bovine tuberculosis, experts feared that vaccinated animals may be healthy carriers. They also questioned the effectiveness of the vaccine because of the scientific shortcomings in the research protocols of their foreign counterparts.

## Viruses and Frontiers

Delphine Berdah presents country-specific regimes of knowledge production and regulation in terms of *ways of thinking*. Based on a comparative and diachronic approach, she distinguishes the endemic French concept of disease from the British environmental approach. She considers vaccines as *frontier objects* which, throughout their development, have circulated between the different communities of actors, in the form of viral strains, notions, methods, experiments and evidence, thus linking the natural and social registers. These concepts enable her to explore the collective, social and cultural dimension of the production of scientific facts that underpin prophylactic choices. She does not present this systematically, but these theoretical choices and the comparative perspective are directly related to Fleck's seminal work on the social history of disease. The comparison between the two countries enables her to show that animal disease control laws should not be understood as responses to an economic context, or as consequences of the forms of state and political regulation in force—centralised in France and more liberal in the United Kingdom. On this point, in fact, the opposite is true. Putting the two diseases into perspective clarifies the dynamics of the boundaries constructed between humans and animals: very porous when one follows the debates and controversies surrounding tuberculosis, less permeable in the case of foot-and-mouth disease. The diachronic approach also makes it possible to underline the extent to which these two *ways of thinking*, although irreconcilable, are not independent of one other. They were formed and reinforced through controversies that combined the arguments and strategies of individual and collective actors. The differences in prophylactic choices between the two countries and for each disease were based on the uncertainties surrounding the effectiveness of vaccines, which experts used to put forward their arguments in the debates that divided them while, in some cases, keeping as close as possible to the government. These uncertainties gave

rise to scientific research, as well as to experiments led by farmers and veterinarians on the ground.

Delphine Berdah concludes her book by highlighting that the environmental notion of the disease is at the heart of current global veterinary policies and motivates virus-eradication strategies through culling measures. It is regrettable that she does not elaborate further on the scope of her work in relation to our current understanding of the disease, in two respects. First, on the separation that has been made between the management of human and animal diseases, beyond the national and international institutional compartmentalisation that she mentions. Second, on the particular focus given to germs, viruses and bacteria as the origin of diseases. This observation in no way detracts from the heuristic scope of this very dense work. In the context of the current pandemic, it invites us to consider the definition of diseases and prophylactic choices based on the historical, social and cultural mainsprings of the production of the knowledge on which they are based.

#### Further reading:

- Ludwik Fleck, *Genesis and Development of a Scientific Fact* (transl. Fred Bradley and Thaddeus J. Trenn), Chicago, The University of Chicago Press, 1979 (1934)
- Gaudillière, J., Gradmann, C., & McDowell, A., “The not-so-distant past, tuberculosis and the DOTS challenge” in *Global Health and the New World Order*, Manchester, England, Manchester University Press, 2020
- Frédéric Keck, “A Genealogy of Animal Diseases and Social Anthropology (1870–2000)”, *Medical Anthropology Quarterly*, Special Issue : Human Animal Health in Medical Anthropology, vol.33, n°1, 2019
- Dominique Vinck, Claude Gilbert, Yves Chalas (ed.), *Comment les acteurs s'arrangent avec l'incertitude*, Paris, Éditions des archives contemporaines, 2009.

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