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Cow 133 at the Central Veterinary Laboratory: Recognising a Novel Zoonosis

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Introduction

Known colloquially as Mad Cow Disease, Bovine Spongiform Encephalopathy (BSE) is one of a group of fatal, progressive neurodegenerative diseases called Transmissible Spongiform Encephalopathies. They take the form of scrapie, a contagious disease affecting sheep and goats first recorded in Britain in the early eighteenth century, and Creutzfeldt-Jakob Disease (CJD), a rapidly deteriorating dementia in humans. Farmers were critical in BSE's early detection. They noticed cattle suffered a loss of control over their limbs, trouble rising, anxiety and eventually paralysis before euthanasia. BSE was found to be a zoonosis: a disease that can be transmitted from animals to humans. The BSE crisis is so-called because it led to the destruction of nearly five million cattle, international bans on British beef imports and the death of 178 people from the variant-CJD. Today, it is accepted that BSE emerged sporadically and spread through the reprocessing of infected material in cattle feed, enabled by intensive farming practices following the Second World War.¹

Under the auspices of the Ministry of Agriculture, Fisheries and Food (MAFF), Central Veterinary Laboratory (CVL) scientists were responsible for infectious livestock disease diagnosis and research. Despite this, when the first case of BSE was identified at the CVL in 1985, government ministers in charge of animal disease control were not alerted to its existence until 1987. The Central Veterinary Officer (CVO), ostensibly the country's chief veterinarian, took a minimal role in advising the government on animal health and disease control policy. Focusing on diagnostic and epidemiological research, CVL pathologists did not have an advisory role, though their outputs certainly would have informed the CVO's recommendations. Existing accounts of BSE have focused on the responsibility of MAFF officials in delaying making it a notifiable disease, out of fear of

¹ Abigail Woods explores the development of post-war agricultural policy in: A. Woods, 'A Historical Synopsis of Farm Animal Disease and Public Policy in Twentieth Century Britain', *Philosophical Transactions: Biological Sciences*, 366 (2011), pp. 1943-1954.

causing panic amongst the public and the meat trade industry.² They do not discuss the influence of CVL scientists on the political response to BSE before 1987.

This paper will demonstrate that, in receipt of the first case of BSE – Cow 133 – the CVL had a pivotal, if indirect, role in dictating how the novel disease was approached by policymakers for a large part of the epidemic. This enables historians of science to rethink their approaches to the BSE episode: the ways in which the CVL understood BSE shows that MAFF did not suppress knowledge but followed the CVL's relaxed lead. Evidence from materials of the Phillips Inquiry – a public inquiry into the government's handling of BSE, published in 2000 – show that actions of senior CVL pathologists were largely motivated by a desire to prevent causing panic in the public and industry. Current literature is interdisciplinary with few accounts from the perspective of historians of science. They often employ the narrative of a government 'cover-up', focusing on the period following 1987 once MAFF had already been alerted to news of the new disease. The role of the CVL is often neglected in explorations of the British government's failure to respond to the crisis in a timely manner.³ Other, more general accounts of the crisis deploy an entertaining telling of the BSE story.⁴ This is useful for a sophisticated lay audience but not as an academic analysis of the origins of the disease's emergence. As a case study for disciplines such as politics, sociology, animal diseases, risk management or science and technology studies, all reflections on the BSE episode require historical analysis.

In late 1984, a cow from Pitsham farm in Sussex presented with the aforementioned behaviours and passed away in February of 1985. This animal was labelled Cow 133 in the veterinarian's records.⁵ By September 1985, seven more cows from Pitsham farm died after

² A notifiable disease is an animal disease, either endemic or exotic, which must be reported to MAFF even if an animal is only suspected of being affected. Failure to report these was and remains a criminal offence.

³ See: David M. C. Bartlett, 'Mad Cows and Democratic Governance: BSE and the Construction of a "Free Market" in the UK', *Crime, Law and Social Change*, 30 (1999), pp. 237-257; Matthias Beck, and others, *BSE Crisis and Food Safety Regulation: A Comparison of the UK and Germany*, Working Paper (University of York: Department of Management Studies, 2007); William D. Hueston, 'BSE and Variant CJD: Emerging Science, Public Pressure and the Vagaries of Policymaking', *Preventive Veterinary Medicine*, 109 (2013), pp. 179-184; Sheila Jasanoff, 'Civilization and Madness: The Great BSE Scare of 1996', *Public Understanding of Science*, 6 (1997), pp. 221-32.

⁴ Maxime Schwartz, *How the Cows Turned Mad* (Berkeley, 2003).

⁵ M. L. Teale & Partners, 'Invoice', 84\12.28\1.1, in Lord Phillips of Worth Matravers, and others, *The BSE Inquiry Report: The Report: The Inquiry into BSE and Variant CJD in the United Kingdom* (hereinafter The BSE Inquiry Report), published October 2000, retrieved from the UK Government Web Archives:

<<https://webarchive.nationalarchives.gov.uk/20080102183314/http://www.bseinquiry.gov.uk/files/yb/1984/12/28001001.pdf>>, accessed 04.09.2020.

suffering similar nervous symptoms. Their peculiarity led to referrals to a Veterinary Investigation Centre for post-mortem, but no definitive diagnosis could be reached. As a result, Cow 133 was passed to the CVL for brain and spinal cord examination.

Assigned to Cow 133 was pathologist Carol Richardson, who found small vacuoles in the brain, causing it to resemble a sponge. These holes were consistent with scrapie-infected sheep brains, but this was the first time she had discovered it in that of a cow.⁶ Consequently, she sought a second opinion. Despite Richardson having never observed bacterial toxins causing this effect on the brain, her conclusion was dismissed by colleague Gerald Wells, who believed the holes were caused by a bacterial toxin.⁷ Wells' modified version of the report was submitted back to the local veterinary surgery. Whilst this has been recognised by historians of science, the reasons why two experienced pathologists came to such conflicting interpretations of the same specimen have not been clarified. For example, Kiheung Kim has revealed scrapie's enduring prevalence in both national and international contexts, but a discussion of BSE research falls outside the scope of his work.⁸ Evidence gathered by the Phillips Inquiry indicate that there are two key and connected reasons: organisational changes within the CVL and the scrapie analogy.

Organisational changes

In 1983, Ray Bradley was appointed as the CVL's new Head of Pathology. Prior to Bradley's arrival, CVL scientists would specialise in one particular species, including all of its organ systems. He enforced a refocus to expertise in one organ system, across all species. In Richardson's testimony to the Phillips Inquiry, she attributed a general lowering of CVL expertise in the 1980s to this change.⁹ She contended that emphasis on the overall knowledge of an individual species improved the pathologist's understanding of the animal's condition as described by farmers. Furthermore, Bradley implemented a change of CVL priorities, from research to diagnosis. As a result, six incomplete research projects

⁶ C. Richardson, 'Form', 85\09.10\1.1, in Lord Phillips of Worth Matravers, *The BSE Inquiry Report*, <<https://webarchive.nationalarchives.gov.uk/20080102171150/http://www.bseinquiry.gov.uk/files/yb/1985/09/10002001.pdf>>, accessed 04.09.2020.

⁷ C. Richardson, 'Report', 85\09.19\2.1, in Lord Phillips of Worth Matravers, *The BSE Inquiry Report*, <<https://webarchive.nationalarchives.gov.uk/20080102171143/http://www.bseinquiry.gov.uk/files/yb/1985/09/19002001.pdf>>, accessed 04.09.2020.

⁸ K. Kim, *The Social Construction of Disease: From Scrapie to Prion* (Oxon, 2006).

⁹ C. Richardson, 'Evidence given by C. Richardson', Hearing Day 28, in Lord Phillips of Worth Matravers, *The BSE Inquiry Report*, <https://webarchive.nationalarchives.gov.uk/20060525120000/http://www.bseinquiry.gov.uk/files/tr/ta_b28.pdf>, accessed 04.09.2020.

were terminated and four dissatisfied staff members left their roles at the CVL. In summary, Bradley's alterations were intended to prioritise diagnosis, but were not conducive to field practice. They did not reflect the intuition vital and present in the farmer-animal relationship.

The use of analogy

Epidemiological models of BSE were initially based on logical reasoning known as the scrapie analogy. This stipulated that: if BSE was bovine scrapie, and scrapie was of no risk to human health, then BSE was unlikely to be a risk to human health. Maya Ponte demonstrates how constant reference to scrapie in discussions of BSE legitimated the response of the government, allowed the prediction of its behaviour and enabled policymakers to presume that BSE would not be a risk to human health.¹⁰ Ponte generalises that everyone with influence over BSE policy relied on established knowledge of scrapie in discussions about the novel BSE. However, I will demonstrate that the Chief Veterinary Officer (CVO) stood as a solitary, but influential dissenting voice.

Carol Richardson was not inclined to analogise but was trained to make diagnoses based on the morphological structure of specimens without using clinical terminology. As a result, she could only diagnose Cow 133 based on what she observed post-mortem, without assumptions based on knowledge of similar conditions. Wells, on the other hand, saw it in his professional remit to diagnose based on an animal and its herd's history. Wells, and other CVL pathologists, only decided that the diagnosis of spongiform encephalopathy was appropriate until similar cases entered the CVL in 1986. Wells believed the brain pathologies of the affected cows closely resembled that of scrapie in sheep, leading the CVL to conclude that they had identified the first case of scrapie in a cow.¹¹ This assumption set a precedent for government response.

Though they are both spongiform encephalopathies, BSE and scrapie are two distinct diseases. Scrapie has been endemic in British flocks for over two centuries and has never crossed the species barrier, whilst this novel cattle disease emerged only in 1984. Still, it was more palatable for CVL pathologists to assume and reassure the ministry that they were dealing with a disease with which they were familiar, than to consider the possibility that it was an emerging disease. Their assumption that the disease was bovine scrapie enabled them to predict its epidemiology, transmissibility and public health

¹⁰ M. Ponte, *Managing Risk and Uncertainty During a Novel Epidemic* (San Francisco, 2005).

¹¹ C. Richardson, 'Evidence given by C. Richardson'.

implications. Presumptive and analogical strategies formed the basis for future animal and public health policy. As MAFF was led to believe BSE was scrapie, the resulting rationale was that there was only a remote chance of it posing a risk to human health via the consumption of infected beef. In a reality not yet realised, BSE-infected meat products put the British public at risk of the fatal variant-CJD.

Led by Wells, the CVL were to publish an authoritative account of what they called 'bovine scrapie' and present the paper to a Joint Meeting of the Medical and Veterinary Research Clubs in May 1987.¹² Knowledge about the novel disease was poised to spread beyond the small circle of state veterinary scientists. In a turning point in this early stage of the BSE episode, CVO William Howard Rees supported publication on the condition that the name of the disease be corrected to BSE. This demonstrates that not all state veterinary scientists shared the belief that BSE was scrapie, with the country's leading veterinary authority warning against the assumption that the two diseases would behave in the same way.¹³ Rees promptly advised MAFF of BSE's emergence but not on the correct course of action, out of fear that the CVL's lack of knowledge about BSE would be exposed and cause public speculation and panic. The most accurate method of investigating risk to humans would be through transmission experiments with primates. However, primates were expensive to acquire, and studies would take several years to yield results.¹⁴ By the late 1980s, funding and staffing shortages meant the CVL struggled with its current caseload. Still, any potential risk to humans required immediate mitigation. Accordingly, the CVL were only able to rely on what was already known about scrapie. Despite their efforts to retain knowledge of BSE, two years after Cow 133 was examined by Carol Richardson, BSE began to receive attention by the wider professional veterinary community.¹⁵ The CVL were forced to reverse Bradley's diagnostic priority to address essential research into the novel disease as the epidemic began.

¹² G. Wells, A. C. Scott, and others, 'A Novel Progressive Spongiform Encephalopathy in Cattle', *Veterinary Record*, 121 (1987), pp. 419-420.

¹³ W. Rees, 'Witness Statement no. 126', in Lord Phillips of Worth Matravers, *The BSE Inquiry Report*, <<https://webarchive.nationalarchives.gov.uk/20080102171002/http://www.bseinquiry.gov.uk/files/ws/s126.pdf>>, accessed 05.10.2020.

¹⁴ W. Rees, 'Minute', 87\07.29\3.1-3.6, in Lord Phillips of Worth Matravers, *The BSE Inquiry Report*, <<https://webarchive.nationalarchives.gov.uk/20080102171035/http://www.bseinquiry.gov.uk/files/yb/1987/07/29003001.pdf>>, accessed 09.11.2020.

¹⁵ T. Holt, and J. Phillips, 'Bovine Spongiform Encephalopathy', *British Medical Journal (Clin Res Ed)*, 296 (1988), pp. 1581-1582.

Conclusion

Before the establishment of independent consultative committees in 1989, MAFF relied solely upon the expertise of CVL scientists. However, a lack of understanding of the disease meant the CVL were unable to carry out their advisory function. Delays and inaction ensued, setting a precedent for the next decade of animal and public health policymaking. The justification of the scrapie analogy was that if BSE is actually scrapie, and scrapie is of no risk to humans, then BSE would not be a risk to humans.¹⁶ Unfortunately, the British government dismissed any risk to human health, with reiterated assurances that 'beef is safe to eat'. The future course of BSE policy was based on this faulty logic, until the first case of vCJD was confirmed in 1996 after the death of a 19 year old.

A deeper exploration of correspondence between CVL scientists and MAFF officials has shown that the Ministry were not lone decision makers at the start of the BSE crisis. Actions of the CVL were critical determinants of the pace of government response and risk assessment. This demonstrates for the first time the agency and influence of state veterinary scientists on how the emergence of BSE was handled in its formative stages. The CVL had significant control over the initial response to BSE in its identity construction, research dissemination and public relations. Structural organisation and individual personalities within the CVL had a lasting influence on animal and human health policy until the start of the twenty-first century.

¹⁶ Ponte, *Managing Risk and Uncertainty During a Novel Epidemic*, p. 39.

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