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John Bull's Beef: Meat hygiene and veterinary public health in England in the twentieth century

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Summary *– Britain played a pioneering role in the introduction of public health practices in the nineteenth century, yet veterinary public health was never a component of that project. The British have for the most part been indifferent to the risks of disease transmitted through meat and milk. This paper explores the reasons for this indifference, which include the nature of Britain's livestock disease regime; the country's prosperity before 1940; the fact that the public health organisation was run by medical men and administered by local authorities; the relatively small and politically weak character of the veterinary profession; the vested interests of administrators, farmers and the meat trades, and economic imperatives. Despite persistent veterinary pressure, it was not until the very end of the twentieth century that European Economic Community regulations and the BSE crisis finally operated to confer supervisory powers over meat production on the veterinary profession.*

Keywords: *meat, hygiene, abattoirs, veterinarians, public health*

Le boeuf de John Bull[1]: l'hygiène de la viande et la santé publique vétérinaire en Angleterre au XX[e] siècle

Résumé – La Grande-Bretagne a joué un rôle de pionnier dans l'introduction de pratiques de santé publique au XIX[e] siècle, mais la santé publique vétérinaire n'a jamais été une composante de ce projet. Les Britanniques ont pour la plupart été indifférents aux risques de maladies transmises par la viande et le lait. Cet article analyse les raisons de cette indifférence, soit : la nature des maladies du bétail anglais, la prospérité du pays avant 1940, le fait que l'organisation de la santé publique ait été décidée par des médecins et administrée par les autorités locales, la faiblesse de la profession vétérinaire au plan politique, les intérêts de l'administration, des agriculteurs et de la filière viande, et les impératifs économiques. Malgré des pressions vétérinaires persistantes, il a fallu attendre la toute fin du XX[e] siècle pour que la réglementation communautaire et la crise de l'ESB confèrent enfin aux vétérinaires des pouvoirs de contrôle sur la production de viande.

Mots-clés : viande, hygiène, abattoirs, vétérinaires, santé publique

JEL descriptors: I18, N34, Q18

Acknowledgements:

I am grateful to Jason Aldiss, Robert Huey and Keir Waddington for constructive comments and suggestions, and to Didier Torny, who commissioned the conference paper on which this article is based.

[1] Depuis le XVIII[e] siècle, dans la littérature et la caricature anglaises, John Bull représente l'Anglais « typique », un bourgeois grassouillet portant un chapeau haut-de-forme et dont le gilet est taillé dans l'Union Jack.

1. Introduction

The history of veterinary public health in England and Wales is for much of the past century, effectively, a non-history. As long ago as 1964 Calvin Schwabe pointed out that Britain and the United States lagged far behind most of Continental Europe in the appreciation of veterinary responsibilities towards human health (Schwabe, 1964, p. 50) [2]. In Britain, this indifference was not integral to the veterinary profession; the Veterinary Public Health Association, a division of the British Veterinary Association, was founded in 1960, and continues to flourish in the twenty-first century. The problem lay rather in the public and political domains where long-established assumptions and administrative structures served to undervalue, and often resist, the potential of veterinary expertise in maintaining human health. The reasons behind the British indifference to veterinary public health are complex and include the nature of animal diseases in Britain, the condition of the veterinary profession, the early establishment of a public health service run by medical men, and the economic concerns of the state. Moreover, the trajectory of minimal veterinary involvement in human health was not precisely the same for the constituent parts of the United Kingdom: both Scotland and Ireland established the veterinary supervision of meat supplies before World War II; Scotland under the Public Health (Scotland Act) 1897, and Ireland under the Agriculture Produce Acts of 1930 (Young, 1932, pp. 1102-1103). In England, this was not properly achieved until the establishment of the Meat Hygiene Service in response to European Community requirements and in the shadow of the BSE crisis, in 1995. While meat is by no means the only human food of animal origin to concern veterinary public health, it has historically played a central role in the interplay between the veterinary profession, the state and the general public over the issue of veterinary involvement in managing human health. Beginning with bovine tuberculosis in the late nineteenth century, shifting to salmonellosis after 1950, and to BSE (Bovine Spongiform Encephalopathy) in the 1980s and 1990s, concerns over diseases transmissible to humans shaped medical and veterinary debates over meat and meat hygiene for over a century. The history of veterinary public health is best approached from the perspective of the meat trades (Koolmees, 2000).

Veterinary public health has been defined as all the interactions between animals and animal products on the one side, and human health on the other (Koolmees, 2000, p. 53). More particularly, this definition has by the twenty-first century come to cover 'all aspects of animal disease, production and enterprise which has any interaction with the human population', including such specific issues as 'residues associated with pharmaceuticals, animal welfare, zoonoses, genetically modified food and feeds, environmental impact of farming, meat hygiene, food safety ... all aspects of the production of all foods of animal origin including seafood, mollusc farming and dairy production'[3]. Since 1960, it may be argued, modern methods of food production have

[2] See also Hardy (2003).

[3] This is the definition of the Veterinary Public Health Association: see www.vpha.org.uk/index.php?page=about. For a broader definition see www.fao.org/ag/againfo/programmes/en/a6.html

significantly broadened the concerns of veterinary public health. In earlier years that concern centred principally on two types of responsibility. First, the control or monitoring of diseases directly transmissible from domestic animals to humans, especially where these were potentially lethal or debilitating, as with anthrax, glanders or rabies; second, the supervision and control of animals whose infections are indirectly transmissible to humans through infected meat, milk, or faecal contamination. From these beginnings, it is possible to explore the context within which British indifference to veterinary public health became established, and to suggest that its foundation essentially rested on the popular perception that animal disease constituted a very small risk to human health in Britain.

The subject of veterinary public health has also largely been neglected by historians, and the British case is no exception (Koolmees (2000, p. 53) makes a very similar observation; see also Koolmees, Fisher and Perren, 1999). Meat and milk, the vehicles of transmission for many zoonotic infections, have attracted historical attention in recent years, usually in the context of the history of human and bovine tuberculosis, where the nature of preventive intervention and contemporary debates around issues of transmission have been the main focus of study. Most of this literature, especially that on meat, focuses on the period before the First World War (Perren, 1978, chapter 4; Waddington, 2001, 2006, 2010; Atkins, 2004, 1992, 2000, 2010; Woods, 2004). Within this history, the issue of veterinary public health *per se* is not addressed, since for the most part it was not itself an issue at the time. Britain's public health administration had been established between 1850 and 1875, and was dominated by medical men and medical models of human disease. For the most part, British medicine viewed the opinions of veterinarians with suspicion (Waddington, 2006, p. 41). This suspicion was only gradually eroded. Although, as will be shown below, interconnections began between the veterinarians and the doctors around 1900, the Royal Society of Medicine, founded in 1907, did not set up a Section for Comparative Medicine until 1923, and not until 1940 did British medical men and veterinarians hold their first joint meeting on public health issues (Joint Meeting, 1940).

Medical suspicion of veterinary opinion stemmed partly from fear of competition, partly from different understandings of disease causation, and partly from the relatively late professional development of British veterinary medicine [4]. It was only towards the end of the nineteenth century that English veterinarians began to consolidate a professional identity (Pattison, 1984; Woods and Matthews, 2010). Although the Royal College of Veterinary Surgeons had received its Charter in 1844, it was not until 1881 that the first Veterinary Surgeons Act established a Register of qualified veterinarians on the model of the Medical Register (initiated under the Medical Act 1858). Improvements were made in veterinary education, although the available information remains sketchy [5]. 1881 also saw the founding of the National Veterinary Association (eventually the British Veterinary Association), a fledgling with a minute membership, which none the less began publication of its own official journal *The*

[4] Medicine was an overcrowded and insecure profession at this period: see Digby, 1994; on medical and veterinary disease models see Worboys, 2000, pp. 56-72.

[5] The barest outline of educational development is given over several chapters in Pattison (1984).

Veterinary Record in 1888 [6]. From the beginning the journal, which was published weekly, acted as a political reporter and focus for the profession in a way that the existing veterinary journals (*The Veterinarian*, *The Veterinary Journal*) did not; it remains the veterinary equivalent of the *British Medical Journal*. 1888 also saw the first publication of the *Journal of Comparative Pathology and Therapeutics*, which laid claim to scientific status, and aimed to align British veterinary research with Continental scientific standards (Wilkinson, 1992, p. 109). These developments, in the context of the simultaneously emerging concern over the transmissibility of bovine tuberculosis to humans, brought British veterinarians into a new association with human public health. In Scotland, the veterinary supervision of meat supplies was introduced in 1897, and local authorities in England and Wales, slowly and in piecemeal fashion, began to do likewise; by 1937, local authorities were employing some 220 full-time and 700 part time veterinary inspectors (Hardy, 2003, p. 5-11) [7]. From 1902, the *Journal of State Medicine*, the official organ of the British Institute of Public Health, began publishing an increasing number of contributions by veterinarians.

The search for a history of veterinary public health in Britain, therefore, begins around 1900, with the two journals, *The Veterinary Record* and *the Journal of State Medicine,* and those of their contemporaries such as the *Lancet,* the *British Medical Journal*, the *Medical Officer and the Veterinary Journal*, which also from time to time published papers or commentaries relating to veterinary public health or comparative medicine. For the most part, it seems, British veterinarians, as scientists, published their views and professional findings in journal articles: a search of the Bodleian Library catalogue, for example, yielded no books on veterinary public health published before the mid 1980s. The voices which come across most clearly in this literature are those of the veterinary profession, and they are highly politicised. In allowing veterinarians access to their journals, the medical men were perhaps demonstrating tacit sympathy with the veterinary position on meat inspection; they rarely did so overtly. Medical men were the managers of Britain's public health administration, and their loyalties lay with their staffs of trained sanitary and meat inspectors, who vigorously resisted the claims of the veterinarians in the pages of their own journal, *The Sanitarian* (later *Environmental Health Officer*). The veterinary journal literature thus presents the main point of access to the history of veterinary public health. Its weakness is that it presents the veterinarians' story at the expense of others'; its strength is that it offers a long-standing and consistently presented account of veterinary perceptions that the contribution they could make to human health was persistently undervalued by the medical and political communities. This paper takes an empirical approach to the veterinary journal literature as an introductory study to the history of veterinary public health in Britain, but it also draws on inter-professional tensions, shifts in the nature of food production, and public perceptions of trust and danger.

[6] A history of the British Veterinary Association, *Practice and Politics: The British Veterinary Association 1881-2010*, by Edward Boden is currently in progress. A work-in-progress version is available on the BVA website: see www.bva.co.uk/about_us/1626.aspx

[7] In England, this municipal veterinary deployment was effectively undermined by the establishment of the animal-oriented State Veterinary Service in 1938.

The general absence of supporting medical voices in the journal literature, and the English veterinarians' failure to achieve their ambitions in respect of meat inspection for most of the twentieth century suggest that the medical doors which opened to them in 1902 did so for a reason. In 1901, Robert Koch had publicly pronounced that bovine tuberculosis was of minimal importance to human infection, to the outrage of the British medical and veterinary community (Waddington, 2006, pp. 112-29). In the interests of rebutting Koch's assertion, which ran directly counter to the accepted British model of tuberculosis transmission through meat and milk, it seems plausible to suggest that the doctors considered it desirable to conciliate the veterinarians by offering them publication opportunities. In so doing, they ran little danger of conceding ground in the administration of public health unless they specifically wished to do so; the veterinary profession remained a small and politically weak until empowered by social change in the years after World War II. As late as 1935, total numbers on the Veterinary Register stood at 3,440, in contrast to some 58,000 on the Medical Register; by 1950 there were 4,929 registered veterinarians as against 77,750 doctors [8]. Moreover, the nature of veterinary work, and the basis of the veterinarians' financial security, were changing dramatically in the first decades of the twentieth century, as the horse economy of the nineteenth-century gave way to the motorised world of the twentieth. Increasingly, veterinary surgeons, whose practices had been focused on equines, were obliged to look to farm animal and small animal practice to fill the economic void left by eclipse of the horse as transport animal of choice. Veterinary interest in meat inspection had an underlying economic motive, at least in the first half of the twentieth century.

During the course of the twentieth century, Britain's relationship to the international meat trade changed, as did particular concerns around diseased meat. Already by 1914, the medical and veterinary anxiety over the transmission of tuberculosis through meat had begun to wane as a result of the measures taken within the existing public health administration (Waddington, 2006, pp. 188-189). In respect of both meat and milk, the drive for improvement came not from the consuming public, but from medical and veterinary professionals, bacteriologists, and small interest groups, whose reforming success in the absence of vigorous public agitation, was limited (Waddington, 2006, p. 188; Atkins, 2010, p. 223). Keir Waddington has noted a paucity of evidence on direct public involvement through insistence of inspection of meat and milk inspection, and that the part played by the public in shaping these concerns was small (Waddington, 2006, p. 188). In the later twentieth century, this continuing public indifference meant that public health concerns over meat were reflected in professional medical and veterinary reactions to perceived threats to human health which changed over time. As regards the meat trades, the disappearance of tuberculosis as a pressure for reform was replaced in the years after 1945 by an increasing public health concern over food poisoning organisms

[8] Royal College of Veterinary Surgeons, *Register and Directory*, 1979. Appendix 1, p. 177; General Medical Council, *Medical Register*, 1950, part 1, Numerical Survey of the Profession, p. viii. The figure for 1935 is averaged from the GMC's figures for 1930 and 1940 (54,537 and 62,847 respectively).

and the salmonellas in particular, as well as drug residues and abattoir effluent (Koolmees, 2000, p. 62). From the mid 1990s, the dominance of salmonellosis was overshadowed in turn by bovine spongiform encephalopathy and the increasing menace of e.coli 0157 (Pennington, 2003). Reflecting this morphing of preventive focus over time, this paper is centred on the debates around food poisoning in period between World War II and Britain's entry into the European Economic Community in the mid-1970s.

2. The Neglect of Meat Hygiene in Britain

In January 1949, the *Veterinary Record* published an article by two Edinburgh veterinarians, Alfred Ginsberg and Alexander Robertson, on the subject of meat hygiene (Ginsberg and Robertson, 1949, pp. 9-10)[9]. They explained that the term had been introduced by the German veterinarian Robert Ostertag (1864-1940) – the recognised authority on questions of meat and its production – to 'connote a collective applied science concerned with the production, inspection and control of meat products'(Ginsburg, A. and Robertson, A., 1949, pp. 9-10)[10]. Ostertag's fame was based on his classic *Handbook of Meat Inspection* (Ostertag, R., 1899); English translation 1904), and on the apparent success of his meat inspection programme in reducing the human incidence of bovine tuberculosis in Germany; the publication of his book in 1904 inspired discussions on the organisation of slaughtering across the British Isles (See North of Ireland Veterinary Medical association, 1907)[11]. Meat hygiene, however, covered a much wider field than the earlier subject of meat inspection, including the condition and health of animals and carcases intended for human consumption, the construction and management of abattoirs, and the reservation, processing, transport and disposal of meat. Ginsberg and Robertson noted that meat hygiene had previously been neglected in Britain. They ascribed this neglect to the economic conditions existing before World War II, when the country felt wealthy enough to dispense with it, priding itself on the production and import of quality meat, and when it was comparatively free from meat-derived human disease owing to the British preference for well cooked meat, and to livestock more or less free from such conditions as trichinosis and beef measles (Cysticerus bovis). As a result, food poisoning had been relatively rare and other serious conditions (tuberculosis excepted) 'practically negligible' (Ginsburg and Robertson, 1949, pp. 9-10). In other words, tuberculosis apart, animal infections had not constituted any serious threat to human public health in Britain in the period before World War II.

Since Rinderpest in the 1860s, Britain's position as an island state, and intermittent policies of agricultural protectionism, seem to have protected her from the

[9] Sir Alexander Robertson (1908-1990), later Director of the Edinburgh Veterinary School and University Dean: http://www.oxforddnb.com/articles/40/40080-article.html; Alfred Ginsberg, PhD Edin., MRVS 1946, later Senior VO, Department of Veterinary Services, Nairobi, Kenya.

[10] The term 'meat hygiene' does not appear in any central role in Ostertag's second major publication (1934).

[11] See North of Ireland Veterinary Medical association (1907, pp. 93-100).

more serious ravages of endemic animal infections communicable to humans. The diseases listed by Ostertag – anthrax, gas gangrene, cattle fever, rabies and glanders – as conditions in which slaughter of domestic animals for food purposes should be prohibited consequently did not appear to pose a serious threat (Ostertag, 1934, p. 82) Rabies and glanders represented the most serious danger to human life (Bloye, 1902, p. 595). Both were indigenous to the British Isles, but the number of human deaths registered annually after records began were in single figures [12]. Rabies was eradicated, and glanders brought under control, in the first decade of the twentieth century. Anthrax was a more persistent problem, especially in connection with the textile and leather goods industries which could result in contaminated landscapes as in the Nene Valley, but even so, the number of deaths recorded was on average fewer than 6 a year. (MAFF, 1965, pp. 151-155; Bartrip, 2002, pp. 236-7). Periodic epidemics of cattle plague and foot and mouth disease provoked popular if groundless fears about transmissible infection, but in the long term none of these infections undermined confidence in the disease status of British food animals. The veterinarian W H Bloye observed in 1902 that, 'the public here ...is comparatively indifferent in regard to the presence of germs in meat and milk' (Bloye, W.H., 1922, p. 595), and the trust which British consumers placed in the existing local authority system of meat and milk inspection was noted again in 1911 (Barnes, 1911, p. 441; Bloye, 1902, p. 596).

An underlying trust in the mechanisms of food control may provide the key to this apparent British indifference to germs in meat and milk. One recent study, which argues that trust in food is dependent on the way in which a given country or government deals with food issues, found high levels of trust in food among modern Britons, despite the food crises of the years 1985-2000 (Kjaernes, Harvey and Warde, 2007, 1, 60-1). The British consumer, this study noted, trusted her local butcher, and advice given on food labels (Kjaernes, U. *et al* (2007), p. 4). Mistrust in foods, it is suggested, is a product of the dramatic changes in food production and consumption that marked the later twentieth century: in a society where local suppliers were still the norm, and consumers had every opportunity personally to know local suppliers and to evaluate the quality of their goods, levels of trust remained high. In the nineteenth century, Keir Waddington has argued, food consumption was shaped by material concerns, standards of living and domestic technology rather than by medical or press reports and the fears they engendered around food and disease (Waddington, 2010, pp. 51-71). This seems to have been especially the case in respect of culturally prized staples like meat, where actual food poisoning was only rarely associated with the meat itself rather than with manipulated foods (pies, sausages), and where episodes of more or less minor gastric disturbance were a commonplace experience. As Roger Horowitz has noted in respect of the United States, recognised problems of meat production have little impact on long-term consumption patterns where meat is the dominant cultural feature of meals (Horowitz, 2006, pp. 153-154).

[12] For glanders see Ministry of Agriculture Fisheries and Food (1965, pp.195-201); on rabies, Pemberton and Worboys (2000).

There is little evidence to suggest widespread public concern around the quality of meat and milk in England before 1914, or even after. There is a paucity of evidence on direct public involvement in food hygiene debates through insistence of inspection of meat and milk inspection, indicating that the part played by the public in shaping these concerns was small (Waddington, 2006, p. 188). In respect of both meat and milk, the drive for improvement came not from the consuming public, but from medical and veterinary professionals, bacteriologists, and small interest groups, whose reforming success in the absence of vigorous public agitation, was limited Waddington, 2006; Atkins, 2010, pp. 223; see also Otter 2004, pp. 40-46; MacLachlan, 2007). Although commentators noted increasing public sensitivity to food hygiene in the 1960s, they also noted continuing complacency: the Chief Public Health inspector for Saffron Walden observed in 1966 (Ames, 1966, p. 256)[13].

We have reached a point when the consuming public assume that every angle of food production is being adequately supervised and controlled on their behalf by either local or national agencies.

In the later twentieth century, public health concerns over meat still reflected professional medical and veterinary reactions to perceived threats to human health, whether salmonellosis, BSE or e.coli. (Pennington, 2003).

While Ginsberg and Robertson thought that complacency in the security of meat supplies stemmed 'mainly' from British economic prosperity, the factors discussed above doubtless contributed (Ginsberg and Robertson, 1949, p. 9). Meat was an important staple in the diet of the English people, and beef in particular was a cultural icon whose power should not be underestimated (Rogers, 2004). Even the poorest families strove to achieve a joint of roast meat for the equally iconic Sunday lunch, even if the lion's share went to the father as bread-winner, and the remains were eked out for the rest of the week (Burnett, 1979, p. 164; Black, 1983, p. 10). With the dramatic nineteenth-century expansion of population and the urban economy, and rising standards of living from circa 1870, Britain's domestic meat supplies had come under pressure, and by the end of the nineteenth century she was heavily dependent on meat imported from abroad to meet domestic demand (Perren, 2006, p. 7). Domestic supplies were augmented initially with live animal imports, and veterinary surgeons became involved with state efforts to limit the associated import of animal diseases following the major outbreak of cattle plague in 1865 (Ministry of Agriculture Fisheries and Food, 1965). By the end of the century, animals were being slaughtered on arrival at the ports; and, by this time, developments in transport had led to a significant shift to the import of chilled and frozen meat (Perren, 2006, pp. 47-51).

2.1. Meat Inspection in Britain

Britain's wealth and policy of free trade placed it at the centre of the developing international meat trade, drawing on the resources of the United States, Canada, Denmark (pork and bacon), Argentina, New Zealand (lamb) and Australia. With the

[13] For enhanced public sensitivity to food hygiene issues see Sugden (1966, p. 10).

exception of 1914-19, the country remained the main customer of the international food industry until 1939, importing over 40% of its meat supply. By contrast, food policy in the rest of Europe remained very largely focused on home production with minimal dependence on imports (Perren, 2006, p. 78, p. 96). Meat consumption in Britain was amongst the highest in Europe, at an estimated 30 kilos per person per annum (*ie* 59.5 lbs); by 1903, consumption had risen to 53.5 kilos (107 lbs) among the working class, and almost twice as much among the middle class (Waddington, 2006, p. 15). The market share of imported meat rose from less than 30% in 1880 to a peak of around 50% by 1923 (Perren, 1985, p. 46). Precisely during this period, major meat exporting countries around the globe, as well as most European states, were implementing meat inspection systems under veterinary supervision (Koolmees, 2000, p. 59). By 1930, Britain's imports came from countries whose exports were certified by qualified veterinary inspectors, and verified by meat inspectors at the port of entry. The existence of a highly competitive international market in meat supplies during the interwar period reinforced the need for high standards among the exporting nations. Meat coming into Britain was examined and passed as fit for human consumption according to the rules of 'meat hygiene', a more rigorous system than that imposed on home-killed meat.

The anomalous situation of England and Wales in respect of meat hygiene and inspection was recognised early. Peter Koolmees has argued that in countries with a strong tradition of centralisation, state intervention in agriculture and public health was more common, and such countries led the way in regulating the meat trades. Initially regulation applied to meat destined for export, but inspection for domestic supplies soon followed (Koolmees, 2000, p. 59). Thus Belgium and Norway passed meat inspection acts in 1891, and their example was followed by Luxembourg (1892), Germany (1903), France and Spain (1905), Austria-Hungary (1908), Switzerland (1909) and Denmark (1911) (Koolmees, 2000). England, by contrast, repeatedly legislated for the branding with country of origin of all imported meat with Merchandise Marks Acts between 1887 and 1953, and for the inspection of imported meat with the Public Health (Foreign Meat) Regulations of 1908, but placed that responsibility in the hands of customs official and medical men (Sieghart and Whalley, 1960, p. 121; Parkes, 1911, pp. 341-351). In 1911, the veterinarian W G Barnes noted that England was 'far behind' other countries in matters of meat inspection, and that both on the Continent and in Britain's colonies, inspection and branding (as proof of inspection) of meat were conducted under qualified veterinary supervision, and 'very stringent' regulations for control of the meat trade (Barnes, 1911, p. 431, p. 439, p. 441) [14]. By the mid 1950s, when a survey of meat hygiene practices in Europe was conducted under the auspices of the World Health Organisation, Britain was the only country of twenty examined which did not normally carry out ante-mortem inspection by qualified veterinary surgeons, and Ireland and England and Wales the only places where the post-mortem examination of animals slaughtered for commercial purposes was not obligatory by law (Hood and Johansen 1957, pp. 117-119).

[14] Barnes. 'Meat branding', pp. 439, 441; further details on pp. 444-448.

On the domestic front, the supervision of meat production remained unsatisfactory in the years up to 1939. The Ministry of Agriculture failed in its attempts to introduce such features of the imported meat business as quality grading and control over markets, as well as a rationalisation of the slaughtering system (Perren, 2006, p. 158). The success of the Ministry in respect of overseas imports contrasted sharply with its failure on the domestic front, where it encountered powerful resistance from wholesale and retail butchers (Perren, 2006, p. 159). In the years up to 1939, the home demand for meat put the domestic meat industry in a strong position, especially since there was no concerted consumer outcry in favour of regulating the meat trades, and the Ministry of Agriculture was more concerned with the economic consequences of animal disease than with food supplies. After 1945, with an international meat market dramatically altered by a global demand created by international prosperity, Britain was to reverse its policy to concentrate on improving home supplies (Perren, 2006, pp. 166-67).

The claims for quality in home-killed British meat were more than slightly doubtful. To be sure, high quality meat was being produced, and selling to the more affluent classes, but as elsewhere in Europe, there existed a dark underbelly of poor quality and diseased meat coming into the lower end of the market, which dated back to the 1840s, albeit with a much older history (Perren, 1979, chapter 4; Blaisdell, 1997, pp. 116-117; Waddington, 2006, pp. 16-20, pp. 71-72). Existing historical scholarship has studied the trade in diseased meat in England in the period up to the Great War (Perren, 1978, pp. 50-68; Waddington, 2006, pp. 11-29, pp. 52-69, pp. 131-152), but it is plain that the problem did not end in 1914. In general, slaughtering in England and Wales was conducted in small, local slaughterhouses, of which there were said to be some 15,000 on the eve of World War II. (Bywater, 1948, p. 219). Many of these were in rural areas which were very difficult to regulate systematically. At any point when slaughtering became concentrated in a particular locality, either on grounds of economy of effort during the Great War, or through the very gradual movement towards the establishment of municipal abattoirs, startling increases in the number of carcases being condemned were noted. Thus when, during the war, the Home Counties kill was concentrated in the London borough of Islington, and the private slaughter houses closed, the amount of meat condemned rose from some 2-300 tons per annum to the 'appalling figures' of between 1,600 and 2,000 tons (Williams, 1931, p. 263). A similar situation arose when the city of Sheffield opened a new public abattoir in the late 1920s: the amount of diseased meat detected shot up by 80%. As the abattoir's designer noted, the only possible inference was that this was the amount previously eaten, mostly by the poorest classes (Williams, 1931, p. 263).

If the British people in general remained largely unconcerned by any health risks associated with meat eating, the medical profession took a different view. Medical and public health concerns about the health risks of eating diseased meat emerged in the mid-nineteenth century, as soon as local public health authorities had been established in London (Hardy, 2003, p. 4). Among the illnesses noted as being produced by the eating of bad meat in the capital were tapeworm infestations and 'poisoning' (Editorial, 1856, p. 311). In the years that followed, the supervision of slaughterhouses and the monitoring of meat quality became the responsibility of the local authorities in

England and Wales. The system developed from the mid-nineteenth century as these authorities became charged with the administration of public health measures, and the duty of supervision fell within the remit of the local medical officers of health (Waddington, 2006, pp. 75-80). Meat quality was considered to be a public health issue, while urban slaughterhouses too frequently came into the category of sanitary 'nuisance', being inevitably associated with objectionable smells from faecal matter, blood, guts and animal skins, and with objectionable creatures in the shape of flies and rats (Waddington, 2006, p. 148). Of growing concern in relation to the debates around the transmission of tuberculosis through infected meat products in the closing decades of the nineteenth century, slaughterhouses and meat inspection continued to be contentious issues for most of the twentieth century. Despite the introduction of regulations and inspectorates, implementation could be patchy, and butchers became adept at avoiding inspection (Waddington, 2006, p. 143). Into the mid 1970s, evidence was being produced of 'many inadequacies in the whole process' of animal transportation and slaughter, and in the subsequent handling of their meat, in Britain (News and Reports, 1976, p. 124).

The British failure to develop a national meat inspection/meat hygiene system on the continental, veterinary-dominated model came about partly because meat inspection became a local authority responsibility, and was rolled into the wider duties of sanitary inspection. The professional standing of the veterinary surgeons was another factor. In the mid-nineteenth century, the British veterinary community was only just beginning to professionalise, and was small in number and politically weak (Fisher, 1993; Woods and Matthews, 2010). As meat inspection became entrenched in the work of public health departments, the vested interests of local authority sanitary and meat inspectors, and considerations of public finance, combined to limit veterinary access to local authority posts. In the interwar period, many local authorities did begin to initiate veterinary public health services, employing veterinarians in both the effort to control animal diseases and to supervise meat and milk supplies under existing legislation, but these posts were swallowed up and the services effectively dismantled with the institution of the new government veterinary service in April 1938, although local authority veterinary posts survived in several major cities, notably Newcastle and Birmingham (Hardy, 2003, p. 11, p. 22). In the years after World War II, meat inspection continued to be the subject of professional turf wars between the local authority sanitary inspectors (later environmental health officers) responsible for inspecting, and veterinarians, who felt themselves to be the only persons properly qualified for the task (Hardy, 2003, pp. 136-140; Comment, 1977, p. 127; News and Reports, 1978, p. 388). Above all, the necessity of *ante mortem* inspection of animals destined for human food remained a critical veterinary argument (Association News, 1971, pp. 613-614). By the later twentieth century, however, veterinarians had become highly trained professionals, and the financial arguments against their employment in the meat industry strengthened (News and Reports, 1975, p. 342).

3. The Meat Industry after World War II

The Second World War marked something of a watershed in the circumstances of the British meat industry. During the war itself, Britain was largely cut off from outside sources, and meat was rationed; a brisk black market ensured that nothing edible, however questionable its provenance, remained unused (Lethem, 1948, pp. 274-5). Government took over the management of meat supplies, centralising slaughtering and closing private slaughterhouses for the duration. With the return of peace, the country's previously privileged position in the world food markets had disappeared. The British pound had devalued drastically, and foreign purchases were uneconomic. Moreover, the world meat market had now become seriously competitive for buyers rather than producers, since the devastation wrought by the war and the steady increase in world population combined to put pressure on resources. In October 1948, for example, it was reported that Argentina might not be able to fulfil her export commitments to Britain, to the extent of 100,000 tons short of contract (Ginsberg and Robertson, 1949, pp. 9-10). Domestic meat supplies had also suffered as a result of the war. Although English cattle numbers stood at a million above the pre-war figure in 1949, total sheep numbers were 6 million down, and total pig numbers nearly 1.5 million down. As a result, British livestock farming embarked on a vigorous programme of expansion (Notes and News, 1949, p. 563). Meat controls, however, remained in place until July 1954, and, as late as January 1953, it was observed that 'today it is necessary to save for human consumption as much meat as can be saved without risk to public health' (Notes and Comments, 1953, p. 50) [15].

The war brought other problems in its train, notably an increase in animal infections transmissible to humans, especially Cysticerus bovis and new salmonella infections [16]. The problem of salmonella infection, linked to changing patterns of food importation and production, was underscored by soaring annual notification figures for human cases, which rose from 119 in 1941 to over 6,000 by 1954 (Savage, 1956, p. 317). By 1950, it was clear than more than 90% of food-poisoning incidents were caused by salmonellae (Taylor, 1949-50, p. 168). Public health concern over this development translated back into epidemiological investigation and additional concerns about practices in the meat industry. It was not only diseased meat that now came under the spotlight, but also handling practices that resulted in raised levels of salmonella infection in stock before slaughter, as well as the contamination of dead meat by infected blood and faecal matter. In 1947, for example, an outbreak of *salmonella typhimurium* infection affecting some 3-4,000 people in an at risk population of 40,000 in Witham, Essex, was demonstrated to have been caused by home-killed meat supplied by a central slaughterhouse in the town, under the administration of the Ministry of Food (Camps, 1947, pp. 87-94). The outbreak occurred in early July, at a time when temperatures were unusually high – between 60 and 70 degrees F (16-21 °C). The sanitary inspector reported that meat distributed on Wednesday 3 July was fly-blown, 'which was apparently no unusual event' (Camps, 1947, p. 90). It was the conditions in the slaughterhouse, however, that most excited the investigating team.

[15] For the ending of meat control see Editorial (1954, p. 113).
[16] For Cysticerus bovis see McLean (1945, pp. 16-17); for the salmonellas, Hardy (2010).

These were described as 'horrible...filthy'. The lavatory had no soap, towels or toilet paper; the clothes of the slaughtermen were contaminated with dried blood and faeces; they rinsed their hands in the bucket used for washing the cloths used to wipe down the carcases, and the fly population was high. As the victims included customers from every retail butchers' shop in the area, the consulting pathologist concluded that the infection 'must have been heavy ... due to a generalised contamination', probably caused by the wiping down process (Camps, 1947, p. 91). The problem did not end there, however, but was compounded by the lax handling of raw with processed meat in the retail outlets (Camps, 1947, pp. 92-3).

3.1. Abattoirs and Infection: Salmonella food poisoning

The Witham outbreak was only one of several such documented in the years immediately after the war (See *eg* Jones and Symons, 1948; Epidemiological Notes, 1950). It was in this context that concerns about meat hygiene re-emerged in the veterinary community, as well as within the public health service (See for example Ginsberg and Robertson, 1949). The establishment of the Public Health Laboratory Service (PHLS), initially as an emergency war-time measure, now led to more systematic and rigorous scientific investigation of many of these outbreaks. The de-rationing of animal feedstuffs in 1953 paved the way for the introduction of methods of intensive livestock production, and a vast expansion in cattle, pig and poultry populations. During the 1950s, the connexions between salmonella infections in animals and food-poisoning events in humans received sustained attention from veterinarians and public health personnel, since the salmonellas were the main cause of food poisoning in England and Wales. A survey of 610 outbreaks and family incidents caused by salmonellae between 1941 and 1957, showed that meat was the vehicle in 47% of outbreaks, egg products in circa 27%, and sweet dishes in circa 17%, with other foods contributing around 9% (McCoy, 1959, p. 117). Further, meat was 'sharply distinguished' from the other vehicles by the high percentage of outbreaks caused by salmonellas other than typhimurium (McCoy, 1959, p. 117). The introduction of 'exotics' into the British salmonella ecology had followed hard upon the introduction of high-protein animals feeds into the new intensive husbandry (McCoy, 1959, pp. 117-8; see also Hardy, 2010). Infection on the farm was translated in magnified form into the human food chain during the processes of slaughtering. In this translation, the abattoir was shown to play a central role.

A web of research contributed to elucidating the role of the abattoir, most of it conducted by public health personnel. The pig had been identified as the common domestic animal most frequently harbouring salmonella organisms in the mid 1930s, and in 1940 William MacDonald Scott, of the Ministry of Health's laboratory, isolated salmonellas from 30% of slaughterhouse samples (Scott, 1940, pp. 366-368). Scott suggested the possibility of cross-infection in lairage, which would increase the number of animals infected at slaughter (Scott, 1940, pp. 366-68). This suggestion was confirmed by the work of Mildred Galton and her colleagues in 1954, which showed that a significant proportion of animals might be infected on the farm, and that during the holding period immediately before slaughter, when pigs might be crowded into

pens for up to 24 hours, all animals were heavily exposed to salmonella infection (Galton *et al.*,1954, pp. 238-239, p. 243).

In the autumn of 1954, a number of family and sporadic outbreaks of salmonella bovis morbificans food poisoning were recorded in the Yorkshire manufacturing city of Bradford. There was strong epidemiological evidence to suggest that pork was to blame, and investigations in the local slaughterhouse resulted in a number of isolations of the organism from pig offal (McDonagh and Smith, 1958, pp. 271-73). The city's deputy medical officer, and a microbiologist from the Bradford Public Health Laboratory, then undertook an investigation into the situation in the slaughterhouse. They found that 2.9% of 171 pigs were excreting salmonella on their arrival at the lairage; but that bacteriological examination of 371 animals after they had spent between one and seven days in the lairage resulted in an infection rate of 13.5% (McDonagh and Smith, 1958, p. 273). Given that Bradford as whole recorded a significant increase in cases of human salmonella food poisoning in 1954 – 168 cases as against an annual average of 26 for 1950-53 – it was decided to continue investigations. In both the following years, salmonella notifications rose, to 217 in 1955 and 240 in 1956 (McDonagh and Smith, 1958, pp. 271-279) [17]. At the same time, the number of sporadic cases of salmonellosis in England and Wales showed a 'striking increase' in 1955 over 1954. As McDonagh and Smith noted, it was perhaps no coincidence that these rises occurred in the context of the de-rationing of meat: the liberated demand for fresh meat had increased the numbers of animals sent to slaughter, leading to overcrowding in lairages and the opportunity for build-up of infection (McDonagh and Smith, 1958, pp. 277-78). They concluded with the observation that the problem of controlling infection in the abattoir 'must give concern to all who have responsibility for the provision of clean food'. They recommended the shortening of the time pigs spent in lairages as the most practical immediate step but that a 'fully satisfactory method', must include measures of infection control on pig farms and new abattoirs built 'on up-to-date hygienic principles' (McDonagh and Smith, 1958, pp. 278-279).

The Bradford investigation proved a pivotal piece of research. Not only did it press home the problem of infections in lairage, but it similarly emphasised the role of post-slaughter contamination: the examination of a total of nearly 300 tissues for both surface contamination and true tissue infection showed a surface contamination rate of 18%, and a tissue infection rate of 4% (McDonagh and Smith, 1958, p. 272). Later studies showed that processed and made up meats – in effect, sausages – played a large role in salmonella infections (McCoy, 1959, pp. 117-18). Thus an investigation of an Irish bacon factory examined faeces from healthy pigs at slaughter, carcase parts from these pigs processed to sausage meat, and samples of sausage meat. There was a steady increase in infection as the chain progressed: healthy pigs showed a faecal infection rate of 6% and a fractional muscle infection; in contrast 70% of 20 batches of sausage meat examined contained salmonellae. The process of mincing meat distributed the surface

[17] It was noted that only 5% of Bradford general practitioners regularly notified food poisoning events.

organisms widely through the mince, while the heat generated in the mincing was thought to encourage bacterial growth (Newell *et al.*, 1959, pp. 92-100). A resume of research findings compiled by J H McCoy, director of the Public Health Laboratory at Hull, made pointed use of both research papers to argue that the reassessment of abattoir measures to prevent the transfer of faecal matter between animals in the lairages, and from animal intestine to animal carcase in the slaughter halls was overdue. Taking the problems of lairage and slaughter hall together, McCoy concluded that (McCoy, 1959, p. 119).

A chain of infection has been demonstrated from the farm to the consumer, and abattoirs have been shown to act as a focal point for the transmission of infection among animals awaiting slaughter, and for the dissemination of salmonellae by widespread surface contamination of carcasses.

3.2. Professionnal Interests and Conflicts

The period from the mid 1950s to the early 1970s saw a relocation of debates on abattoirs and meat inspection from the veterinary journals to epidemiological and public health journals, especially the *Royal Society of Health Journal*, which published contributions in this area from microbiologists, public health officers and veterinarians. This shift may partly have reflected the development of active research interests among these other communities, but may also partly have been due to the controversy generated by A. Graham's presidential address to the National Veterinary Medical Association at Aberdeen in 1953, which was an unashamed pitch for veterinary involvement in the meat trade. In every other country 'of note', he observed, including Scotland, veterinarians were responsible for meat inspection; only in England and Wales did there exist the anomaly that imported meat carried a veterinary certificate and home-killed meat did not. Veterinarians' training and expert knowledge, he declared, qualified them more fully for meat inspection work 'than any other technician' (Graham, 1953, p. 692). In the controversy that followed this statement, it was suggested that the veterinarians 'would be well advised to leave meat inspection alone, and concentrate on dealing with animal disease' (Editorial, 1954, p. 175). None the less, it was pointed out that veterinary surgeons were greatly handicapped in their work with animal disease by the unavailability of slaughterhouse evidence that could be correlated with live animal statistics (Editorial, 1954, p. 175).

Increasingly through this period, the PHLS emerged as a key player in the game, encouraging and publishing research, noting and evaluating research outcomes, holding a scientific balance between the veterinarians, the meat trade, and the local authority inspectors. Between 1950 and 1953, for example, the PHLS cultured salmonella materials from abattoirs in Birkenhead, Birmingham, Bradford, Newcastle, Nottingham and Taunton, with a view to ascertaining the incidence of salmonellas in carcases passed for human consumption (Salmonella Sub Committee of the Public Health Laboratory Service, 1955, p. 132). A decade later, PHLS workers were investigating salmonella contamination in imported Dutch chilled meat and offal (Dixon and Peacock, 1965, pp. 361-64). Such researches helped to shift perceptions about the origin of food poisoning from the human to the animal intestine. In 1965, Betty Hobbs, one of the leading salmonella researchers at the PHLS, noted that 'one of

the newer concepts' of food poisoning related to the role of animals, rather than humans, in transmitting all salmonella serotypes other than typhoid and paratyphoid. Thus, she observed (Hobbs, 1965, p. 123).

The origin and spread of infection amongst food animals becomes of paramount importance and the good hygiene of abattoirs, manufacturing and retail establishments a barrier against the build-up of infection and contamination which could invade the population.

Information on the symptomless excretion of salmonellas by animals, she added, and of the factors contributing to the establishment of major foci of infection, was growing, but much remained to be learnt (Hobbs, 1965, p. 123).

Even while perceptions on the origin of salmonella food poisoning were shifting, government was beginning to take a hand. When the de-rationing of meat became a real prospect in the autumn of 1953, the Interdepartmental Committee on Slaughterhouses (which had been set up in February 1953) was asked to indicate how to ensure that there was no shortage of slaughtering facilities when the pre-war conditions returned. The concentration of slaughtering during the war was said to have ensured 100% meat inspection, and government had initially been inclined to continue the operation along these lines (Blamire, 1962, p. 155). Faced with de-regulation, the Committee recommended that slaughterhouses in operation before wartime controls be re-licensed, except where the local authorities thought existing facilities were adequate. As a result, 4,000 additional slaughterhouses came into use in July 1954, bringing the total number active in England and Wales to some 4,500 (Blamire, 1962, p. 155) [18]. Trouble soon followed. A novel feature of the newly resurgent livestock trade was a large increase in the market for veal, which, in the existing conditions of transport and lairage, quickly led to an increase in salmonella infection in calves, resulting in several serious outbreaks of food poisoning (Hughes, 1962, p. 83). This once again raised the issue of controlling the meat industry, which, as David Hughes, professor of veterinary pathology at Liverpool University, observed, had grown up piece-meal, and 'with time developed some formidable vested interests, not least of which are the local authorities themselves and the meat trade' (Hughes, 1962, p. 83). As a result, legislation was a compromise, not a 'logical scrapping' of the existing system in favour of a 'sensible' new one (Hughes,1962, p. 83).

The Slaughterhouses Act 1958 was one of three pieces of legislation and three sets of regulations resulting from the salmonella in veal debacles [19]. It required slaughterhouses to conform to certain minimum standards regarding facilities for humane slaughtering, adequate meat inspection, hygienic processing of meat and for the safety, health and welfare of workers (Blamire, 1962, pp. 155-56). In a parallel amendment of the Food and Drugs Act 1955, local authorities were empowered to close private slaughterhouses under certain conditions, and under the Slaughterhouses Act they were each required to compile slaughterhouse reports containing a survey of

[18] Of these establishments, some 4,150 were privately owned, 200 public, and 220 were bacon factories.

[19] For details of these and their critique see Hughes (1962).

their area, the facilities available, and those proposed to meet the new requirements (Blamire, 1962, p. 156). Within a few years the number of slaughterhouses had fallen to some 3,800, and at least another 1,000 were likely to close within a few years. At the same time, around 150 new slaughterhouses had been built, with another 200 plus planned, of which 50 would be municipal facilities (Sugden, 1966, p. 13). By 1966, commentators were noting 'enormous' improvements in the physical condition of slaughterhouses, but that in many cases similar changes in the practices carried on within them were wanting (Sugden, 1966, p. 13). Animals were still being kept longer than two days before slaughter, and wiping cloths were very much in evidence, and it seemed unlikely to some that that the possibility of infected meat entering the human food chain could ever be entirely eliminated. F.G. Sugden, a public health inspector, noted the difficulties inherent in the butchering trade (Sugden, 1966, p. 13).

Even if wiping cloths are banned, it will be a long and uphill struggle to persuade the butchers and slaughtermen to accept it. By its very nature the work of slaughtering animals and dressing carcases is messy and dirty, and it is not easy to convince the average slaughterman that he is dealing with a product that needs clean and careful handling.

In fact, Sugden concluded that it seemed unlikely that the possibility of infected meat gaining access to the butcher's shop or preparation room could ever entirely be eliminated (Sugden, 1966, p. 13).

4. The British Meat Industry, Meat Inspection and the European Union

By the later 1960s, the question of British membership of the European Economic Community was again in the air. Against this background, and in the context of continuing agitations from public health officials and veterinarians, government began to introduce measures aimed at tightening up practices in the meat trade. A long-standing ambition among those concerned had been to achieve once more the standard of near 100% inspection of meat before leaving the abattoir, such as had been achieved during World War II. In 1966, regulations were issued with the intention of furthering this ambition, and, from November 1968, the use of wiping cloths was entirely prohibited (Anon, 1966, p. 263; News, 1968, p. 356).

The pattern of human salmonella infection in England and Wales, meanwhile, seemed to indicate that control was beyond the reach of recent legislation. Surveying the incidence of human infection between 1960 and 1971, Lee noted that the total number of incidents had declined by more than a third between 1960 and 1966, only to double again to 1971 (Lee, 1974, p. 186). He identified two principal trends: first, that the proportion of incidents caused by meat and meat products had increased, and second, that the number of incidents caused by serotypes other than typhimurium had also increased. Seven serotypes determined this trend: agona, enteritidis, Indiana, panama, Stanley, Virchow and salmonella 4, 12:d:-. The appearance of the latter, and also of agona, indiana and Virchow, was probably due to imported contaminated animal feed (Lee, 1974, p. 187). By 1974, the close connection between contaminated environments and salmonella infection in humans and animals was well recognised, in

England and Wales as elsewhere (Sojka, Wray and Hudson, 1975, p. 284). But analyses conducted from other perspectives continued to complicate the epidemiological picture. Within a couple of years, it had been shown that the continuing rise in human salmonellosis since 1970 was associated with general outbreaks – *ie*, not family or sporadic incidents – and so to foods supplied by the catering trade or food manufacturers (Sheard, 1977, pp. 258-59). Once again, public complacency was identified as a critical factor in permitting this situation to continue (Sheard, 1977, p. 261). The risks of food poisoning could still be shifted from meat hygiene and abattoir, *via* manufacturers rather than producers, back to human and individual responsibility.

The shifting of blame was part of the political game being played out between environmental health officers, veterinarians, the Ministry of Agriculture, Food and Fisheries (MAFF) and the local authorities. Thus the authors who in 1975 linked salmonellosis to the environment and offered environmental solutions, were veterinarians employed by MAFF; while the health education solution was proffered by a local authority official (Sojka, Wray and Hudson, 1975; Sheard, 1977). At the same time, independent veterinarians were still – with an eye to Britain's European Economic Community membership – asserting their right to be the solution by controlling ante and post mortem inspection at the slaughterhouses. In November 1971, for example, the British Veterinary Association had emphasised the need to bring English meat inspection 'up to E.E.C. standards', calling for veterinary supervision of the entire process from ante-mortem inspection onwards; asserting that the veterinarian, by his training and experience, was the professional best qualified for the task (Association News, 1971, pp. 613-614). The call met with an angry response from the National Farmers' Union, the meat trades and the public health inspectors, and produced some 'highly flavoured' press coverage, with the *Daily Express* front page headline reading: 'Poison risk worst in British meat' (Association News, 1971, p. 614; O'Brien, 1971, p. 620). Even veterinarians were moved to protest: 'Is it really necessary', asked one, 'to antagonise the producers in this way order to gain the necessary legislation to improve a difficult situation?' (O'Brien, 1971, p. 620).

It seems clear that the veterinarians saw Britain's entry into the E.E.C. as a promising opportunity to bring England's meat inspection system into line with European practice, as they had been aspiring to do since the interwar period. Veterinary supervision of meat inspection combined with existing responsibilities for animal health, would effectively constitute a system of veterinary public health such as had begun to emerge in the interwar period. In this expectation they were disappointed. Britain's entry into the European Community passed without significant change to meat supervision in England, since E.E.C. requirements for inspection applied only to produce intended for export, and not to the domestic market (News, 1972, p. 158). By contrast Northern Ireland, with an important meat export trade, had early introduced a Veterinary Meat Inspection service, with approved premises and veterinary certification [20]. Amid continuing controversy, the British government issued

[20] See www.dardni.gov.uk, 'History of the centralised Northern Ireland Meat Inspection Service'.

the Slaughterhouses (Hygiene) Regulations 1977, which required that animals known or suspected to be diseased or injured be accompanied by the veterinary certificate when sent to slaughter. (Notes and Reports, 1978a, p. 430). At this time, there were no plans for engaging veterinarians in the meat trade [21]. Following the first BSE scare in 1986, the Authorised Officers (Meat Inspection) Regulations 1987 included veterinary surgeons among the personnel permitted to undertake such duties, along with Environmental Health Officers and qualified meat inspectors. Responsibility for meat inspection remained in the hands of the local authorities.

The relaxed approach which English governments took towards meat inspection was finally countered by impending implementation of the single European Market in 1993. In 1990, MAFF was reported to be trying to reshape meat hygiene arrangements ahead of the single European Market (Comment,1990, p. 557). This effort resulted in the Fresh Meat (Hygiene and Inspection) Regulations 1992, following which some 300 local authorities established full meat hygiene services [22]. The spur for this activity was the European Community's directive 88/409, which required domestic slaughterhouses to be brought into line with the regulations governing approval of abattoirs exporting meat to other member states, and the ante mortem inspection of animals by a qualified veterinarian (Comment, 1990, p. 269). Even so, there were complications, but European directives, reinforced by the renewed scare surrounding BSE and nVCJD, finally ensured the establishment of the Meat Hygiene Service in April 1995, in which veterinary surgeons played a central role, local authority veterinarians being transferred into the new service (Comment, 1996, p. 453; Longstreeth, Huey and Cooke, 1996, p. 528).

5. Conclusion

In 1975, a distinguished veterinarian had remarked that, 'It is our task to drag the meat industry in this country, kicking and screaming, into the 20th century' (Morris, 1985, p. 198). Twenty years later, the European Community achieved what England's veterinarians had been unable to achieve through a century of persistent pressure. Unsupported by either central or local government, or by the meat trades or the producers, the veterinarians were not politically powerful enough to overcome the obstacle presented by an established, indeed entrenched, system of local authority regulation. In this sense, observers were right in considering that the fabric of vested interests around meat inspection was too strong. Moreover, there was no significant degree of public support for the veterinarians. On occasion, observers evoked the power of the housewife to effect change, (Sugden, 1966, p. 14) but at no point in the sorry saga of Britain's meat industry, even during the BSE crisis, did English consumers rise up and demand veterinary control of slaughtering. The persistence of an ideal of veterinary public health among English veterinarians may have been partly due to financial aspirations, but from at least the mid century it increasingly sprang from the

[21] Notes and reports, 'No change in meat inspection arrangements' ibid., p. 452.
[22] Jason Aldiss, personal communication, 18, 19 November 2010.

realisation of new hidden hazards in Britain's meat supply. Anxieties surrounding salmonellosis and red meat proved pivotal in debates on meat and meat hygiene between the 1950s and the 1970s, and helped to refocus concern away from animal disease in the field to meat hygiene and practices in the slaughterhouse.

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