Imperial Bovine Bodies: Rendering Chinese Milk and Meat Fit for German and Japanese Consumption
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Abstract
This article extends and enriches the overlapping histories of food and animals through an investigation of how and why Chinese animal bodies, during the first three decades of the twentieth century, were subjected to a process by which they were rendered fit for German and Japanese consumers. Much of the current historiography for both fields neglects the important impact that imperial activities in East Asia exerted on the international trade of livestock and deadstock and the veterinary regimes put in place to combat the transnational threat of infectious animal diseases. Focusing on Qingdao in Shandong Province, this article sheds comparative light on the contrasting dietary needs of German and Japanese colonizers in shaping how animal bodies in general were processed, how bovine resources in particular came to acquire distinct values, how issues of animal health were coopted into various economic and political arguments, and how different conditions influenced boundary-work that was integral to making Chinese animal products palatable for German and Japanese consumption.

Keywords: food, animals, meat, milk, health, slaughterhouse, Japan, China, Germany, imperialism
Introduction

When German troops seized Jiaozhou Bay in 1898 (located on the southern coast of Shandong Province, northern China) and when Japanese forces took over the leased territory from the Germans in 1914, both latecomers to the imperial scene set about exploiting the natural resources of the region.\(^1\) Coal, cotton, groundnuts, and silk represent some of the most popular exported commodities to which economic historians have turned to show how northeast China, through the ice-free port in Qingdao, became embedded in world markets.\(^2\) The existing literature has, however, remarked less upon the exploitation of animal resources.\(^3\) Cattle, in particular, offered value as a source of milk or beef, the trade of which was also internationalized, with shipments of the latter being exported to numerous countries in East and Southeast Asia. As in the commodification of other natural resources, science and technology played a crucial role in rendering raw Chinese bovine bodies fit for consumption: Shandong cattle were exploited, extracted, processed, tamed, transported, and made to comply with German and Japanese standards of health and hygiene.\(^4\)

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1. This article will render Japanese and Chinese names with surnames first and given names second, unless they appear in English-language publications.
3. For a recent exception, as well as insights into the expanding beef trade in the region more generally, see Thomas David DuBois, “Many Roads from Pasture to Plate: A Commodity Chain Approach to China’s Beef Trade, 1732-1931,” Journal of Global History 14, no. 1 (March 2019): 22–43.
4. The concept of “rendering” is taken from Nicole Shukin, who employs the concept to reveal not just the economic but also the biopolitical dimensions of livestock production. Nicole Shukin, Animal Capital: Rendering Life in Biopolitical Times (Minneapolis: University of Minnesota Press, 2009), 20–24.
The development of this imperial and transnational foodway was characterized by three overlapping stages. First, the railroad penetrated the interior of China, making it possible to exploit and extract bovine bodies in unprecedented numbers ready for transportation to Qingdao. Second, depending on whether bovine bodies were to be transported dead or alive, a veterinary inspection regime centered around the public slaughterhouse was introduced to process the bodies and mitigate the risks they presented to the health of other livestock and humans. Finally, refrigerated ships packed as much fresh beef as possible into their hulls to satisfy (in the Japanese case) the growing appetite for beef among the broader population. This operational scale could not have been achieved by “human hands” alone; costly and complicated infrastructures, mechanics, protocols, and logistics were aligned to make possible the co-exploitation of the bovine resources that northern China had in abundance.\(^5\) As a result, the Germans and Japanese paved the way for the internationalization of the meat trade in East Asia.

During the 30 years in which Chinese animal bodies—dead or alive—increasingly traversed national borders, German and Japanese rulers engaged in “boundary-work” that resulted in divisions between people, animals, knowledge, and practices.\(^6\) Boundaries were drawn between German and Chinese diets. European animal bodies were separated from Chinese ones. Quarantines were imposed to segregate livestock arriving by rail from those kept in Qingdao. Inspections differentiated between healthy and unhealthy livestock. Rules were created to separate hygienic spaces and places from unhygienic ones. Pre-slaughter inspection and post-slaughter inspection took place at different times and locations. Edible bovine products were sharply divided from inedible ones.

Many of these boundaries were constructed with the help of scientists who enthusiastically embraced their role as empire builders. Medical and veterinary experts dictated where these divisions should be drawn. They determined how much the authorities should intervene in the policing of animal bodies. They also assessed the reliability of different serums manufactured by various countries for the purposes of inoculating bovine bodies earmarked for export. Not infrequently, since animals and food were intersecting spheres of interest, physicians and veterinarians (as well as their representative bodies) could contest the other’s expertise, with the results indicating the relative power they held in the colonial apparatus.

Revealing the processes by which Chinese animal bodies were rendered suitable for German and Japanese consumption helps extend our understanding of two intersecting and developing areas of historical research. First, the article intervenes in the growing field of Japanese food history. One problem with the current state of knowledge is how historical accounts of meat—seen as central to efforts to modernize the indigenous Japanese

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\(^6\) In Science and Technology Studies (STS), the concept of “boundary-work” is typically used to refer to the divisions created between different forms of knowledge. In an imperial and fluid setting such as Qingdao, where different nationalities, animals, habits, and forms of knowledge mixed, a broader application of the same concept is useful in capturing the boundaries that were drawn and redrawn to process animal bodies.
diet—neglect the extent to which demand for beef was satisfied by countries in East Asia. Becoming like the modern West involved adopting Western-style diets and eating habits, but it also involved constructing new trade networks from which ingredients for new dishes, such as beef pot (gyūnabe), could be sourced. Building on the work of Noma Mariko, who first drew attention to the significance of Qingdao beef in Japanese markets, this article shifts the focus away from an overt interest in the impact of the West to a reappraisal of the influence exerted by East Asia. It thus contributes to a growing body of work that rehabilitates the role of China and Korea in shaping modern Japanese food culture.

Second, the article builds upon research that is concerned with the history of animal health. Influenced by the “animal turn” in scholarship more generally, historians of medicine have in recent years made concerted efforts to consider the impact of not just human but also animal diseases on modernizing societies. Most of the research carried out thus far has concentrated on developments in the West, although some investigations into European colonies have been made. However, with the significant exception of scholars like Robert Perrins, who has looked at animal health in colonial Manchuria, interest in how problems of infectious animal diseases were dealt with in East Asia is lacking. This state of affairs has prompted Iijima Wataru, a leading medical historian, to call on scholars to concern themselves with the history of livestock hygiene. Given the massive importance of animal health and meat hygiene in the ever-increasing trade in meat and livestock in East Asia today, research that can reveal the evolution of modern regimes of animal and meat inspection in the East Asian context is long overdue. It also helps correct the Western-centric concentration of the current historiography, even while acknowledging the influences of nations like Imperial Germany in the construction of those regimes.

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8 Gyūnabe is known today as “sukiyaki”—a dish usually made with thin slices of beef, vegetables, tofu, and noodles simmered in a sweet sauce.


10 See, for example, Timothy Y. Tsu, “Who Cooked for Townsend Harris, America’s First Consul General to Japan? Chinese Cooks and the Beginning of Western Cooking in Modern Japan,” Journal of Japanese Studies (Forthcoming); Iwama Kazuhiro, ed., Chūgoku ryōri to kindai nihon: shoku to shikō no bunka kōshi (Tokyo: Keio University Press, 2019).


Due to space constraints, this article must exclude comparisons with other colonies such as South Africa, India, and Kenya. It is concerned foremost with revealing how German attitudes were more conservative while Japanese attitudes were more progressive during the first three decades of the twentieth century. Why were German perspectives focused narrowly on the colonizers’ own diets and constructing a health regime that protected the Western inhabitants of Qingdao itself, while the Japanese focused more broadly on the Japanese diet as a whole and constructing a health regime that sought to strengthen—through abundant supplies of cheap beef—the Japanese body? Based on analyses of untapped archival documents and primary sources in German and Japanese, this article contributes to the growing body of international research shedding light on the relationship between food animals and modernization.

Rendering Chinese Milk Fit for German Consumption

One of the most influential scholars to shape German views of Shandong was the Prussian geographer Ferdinand von Richthofen. He received financial backing from the San Francisco Chamber of Commerce to make extensive field trips to China in the late 1860s and early 1870s, conducting surveys that mapped out not just the geography of the land but also the economic resources the country could offer the world. Shellen Wu has recently remarked that because of this body of work, Richthofen is celebrated in the West “as a pioneer of scientific exploration in China” but “vilified in China for opening the floodgates of imperialism.” As early as 1868, Richthofen saw much potential for extracting the untapped deposits of coal in Shandong Province and believed that both the West and the Chinese could benefit from its export through the development of railroads. His pronouncement is widely considered to have provided scientific justification for the selection of Qingdao as the first German colony in East Asia and contributed to the massive investment sunk into constructing a railroad that linked Qingdao to Jinan (the center of Shandong Province), with the principal aim of opening up the coal mines in Boshan for international trade.

Compared to his enthusiasm for resources such as coal, Richthofen showed relatively little interest in the economic potential of livestock. Large numbers of cattle, pigs, dogs, and

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19 Ibid., 349–50.
chickens dotted the landscape of Shandong, but they rarely entered his field of vision. One exception was when he turned his attention to the topic of food, which rendered more visible the (dead) animals he must have encountered. For Richthofen, it was inconceivable that Europeans would choose to eat like the natives—the Chinese diet was simply “unpleasant”—and so it was necessary to find ways of procuring Western staples such as meat and milk.\textsuperscript{20} Continuing to adhere to a European diet was difficult: the Chinese generally consumed very little meat, fish, or dairy.\textsuperscript{21} For this reason, Richthofen counseled his countrymen to hunt pheasant, quail, and pigeon, but he reassured them that despite the low demand for them, Chinese towns did sell beef, chicken, and eggs.\textsuperscript{22} He warned his compatriots, however, to avoid pork. Precisely because it was exceptionally popular among the locals, Richthofen considered Chinese pork to be “unclean” and thus unworthy of German consumption.\textsuperscript{23} Several years after Richthofen penned his observations, German colonists began to live in the leased territory towards the end of the nineteenth-century and quickly set about making their own arrangements for the provision of meat and milk. They also inherited suspicions about the native diet that informed the rules drawn up on the inspection of both. This attitude reflected a broader infatuation with high standards of hygiene that served to erect a wall between the Germans and the Chinese and to exacerbate the racial segregation that characterized Qingdao as a colony.\textsuperscript{24}

Milk rather than meat proved to be the most vexing concern for the newly arrived colonists. With the arrival of large numbers of German women and children, the demand for milk and dairy products spiked. While Chinese mothers appeared to have had few problems breastfeeding their own babies, German mothers (perhaps due to difficulties acclimatizing) appear to have struggled, making it necessary for cow’s milk to be readied as a supplement.\textsuperscript{25} Since the Chinese did not share this custom of drinking fresh milk and did not possess the corresponding knowledge to breed and rear dairy cows, the Germans found it hard to extract sufficient amounts from the teats of indigenous cows, which only produced between 1.5 and 2 liters of milk per day.\textsuperscript{26} Moreover, in comparison to European breeds, Chinese cows had shorter lactation cycles, which meant they could not be milked as frequently or for long periods. Such a desperate situation was exacerbated by Chinese merchants’ perceived penchant for mischief. They were seen to adulterate deliveries of milk by diluting them with water or limewater. To address this situation, the German authorities were quick to lay down rules. To be able to do business with the Europeans, milk merchants

\textsuperscript{20} Ferdinand von Richthofen, Kiautschou. Seine Weltstellung und voraussichtliche Bedeutung (Berlin: Georg Stilke, 1897), 135.
\textsuperscript{21} Frederick J. Simoons, Food in China: A Cultural and Historical Inquiry (Boca Raton: CRC Press, 1990), 293.
\textsuperscript{22} Richthofen, Kiautschou, 135.
\textsuperscript{23} Ibid., 136.
\textsuperscript{25} Max Eggebrecht, Der tierärztliche Anteil an deutscher Kulturarbeit im Schutzgebiet Kiautschou (China) (Berlin: Tierärztliche Hochschule Berlin, 1923), 20.
\textsuperscript{26} Ibid.
had to register their names and addresses; cattle that were diseased or suspected to be
diseased needed to be reported and quarantined; and severe penalties were imposed when
regulations were flouted.\textsuperscript{27} It also led to concerted efforts to import German cattle—mainly
East Friesian and Jeverland breeds—which would then be crossbred with Chinese cows in
the hope of achieving better yields.\textsuperscript{28} By intervening in the reproductive process, the German
colonizers hoped the milk would improve the health of German bodies weakened by their
new environment.

Responsible for securing and policing stable and safe supplies of milk were German
veterinarians who otherwise spent most of their early years in Qingdao busy fulfilling their
military duties.\textsuperscript{29} Also tasked with overseeing the breeding programs, they rarely extended
themselves beyond the colonial enclave. That was in stark contrast to their responsibilities
back home, where the elites of the profession—the veterinary officers—assumed a more
international field of vision. Sparked by the trichinosis outbreaks in the 1860s, which revealed
that consuming raw pork could cause human death, by the 1880s, veterinarians in the
metropole became acknowledged experts in an inspection regime that centered on newly
built public slaughterhouses, where meat and the health of animals were assessed as fit for
consumption or trade.\textsuperscript{30} One major reason for the development of such a costly regime was
the political nature of the international trade in meat and livestock. Cheap imports of pork
from the United States could be removed from German markets, and imports of Russian
cattle, which were held chiefly responsible for infecting domestic cattle with diseases, could
also be expelled to prevent the infection of German livestock earmarked for export to such
lucrative markets as the United Kingdom.\textsuperscript{31} While Qingdao was also exposed to the risks of
epizootic outbreaks from Shandong Province, the overriding veterinary concern in the leased
territory was the health of their own German dairy cows. Despite the increased importance
of cattle exports to countries like Russia in later years, interest in animal health narrowly
focused on protecting the food security of the colonizers. It was not until the Japanese
takeover in 1914 that broader interests informed veterinary policy.

\textbf{Rendering Meat Fit for German Consumption}

Meat took on less importance for the colonizers than milk, but this did not prevent the
Germans from introducing public meat inspection controls along the lines that had been
introduced in their homeland, where the state was increasingly involved in mandating
scientific inspection of food animals before and after slaughter.\textsuperscript{32} In 1899, Ernst Rassau, the

\textsuperscript{27}Manuel Töpfer, \textit{Der Veterinärdienst des Deutschen Reiches in China von 1898 bis 1914} (Gießen: DVG, 2010), 20.
\textsuperscript{28}Eggebraecht, \textit{Der tierärztliche Anteil}, 20.
\textsuperscript{29}Ibid., 17.
\textsuperscript{30}Tatsuya Mitsuda, “Entangled Histories: German Veterinary Medicine, c. 1770–1900,” \textit{Medical History} 61, no. 1
(2017): 38–42.
\textsuperscript{31}Tatsuya Mitsuda, “Trichinosis Revisited: Scientific Interventions in the Assessment of Meat and Animals in
\textsuperscript{32}For an overview of this development in Europe, including Germany, see Peter A. Koolmees, “Veterinary Inspection
and Food Hygiene in the Twentieth Century,” in \textit{Food, Science, Policy and Regulation in the Twentieth Century}, eds. David F.
first veterinarian in Qingdao, felt that the colony did not need to introduce a full-blown meat inspection regime based on the German model. Yet he also acknowledged that some form of meat inspection was needed upon witnessing how meat was typically prepared in China, where there appeared to be very little care taken to maintain high standards of hygiene and to minimize the risks of infection, spoilage, or adulteration. Echoing sentiments expressed by Richthofen, German colonizers feared contamination of the meat they consumed. Moreover, German employment of Chinese kitchen staff was liable to increase the risks of “disgusting” and “harmful” food entering circulation. Local butchers who handled the slaughter of animals were no better. Rassau was shocked to see them gleefully devour infected meat to prove to him that it caused no harm. In the 1860s, scientists had leveled a similar critique at German butchers, whose knowledge of meat handling was labeled unscientific, but German criticism, when directed at the Chinese, assumed racial undertones. Not least due to such fears, regulations based on those from Rassau’s native Hesse-Nassau were introduced in 1899, making it mandatory for animals slaughtered for human consumption to undergo veterinary inspection.

Constrained by the lack of dependable hands with which to reduce the threat of Chinese animal bodies, it became necessary for the Germans to limit the spaces in which slaughter took place. At the outset, Rassau made periodic visits to neighboring villages to inspect their slaughter in designated sheds. As this proved time-consuming, Rassau set up a temporary slaughterhouse in Hsiauniwa, located in the south-west of the town. Rather than Rassau making trips to them, traders now needed to bring livestock destined for European consumption to him in this centralized location. Temporal conditions were tightened, too. Merchants were required to deliver livestock a few days before slaughter, which gave Rassau time to assess their health more reliably before they were put down.

Despite this strengthening of spatial and temporal controls, Rassau also pointed out that in view of the “still insufficient numbers of surveillance and supervisory personnel,” the kind of meat inspection carried out back in Germany could not be implemented without the erection of a proper slaughterhouse. In time, local concerns meshed with imperial dreams of creating a “model colony” to construct a state-of-the-art slaughterhouse. Following study trips to Shanghai and Germany, the governor-general decided to build a slaughterhouse based on the Dresden abattoir that would showcase the best of German

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34 Töpfer, Der Veterinärdienst, 24.

35 Rassau, “Fleischbeschau,” 263.

36 Töpfer, Der Veterinärdienst, 20.


39 The term abattoir is the more formal and modern name for a place where the large-scale, mechanized, and government-regulated killing and inspection of animals takes place. It will be used interchangeably with the term slaughterhouse.
science and engineering. Opened in 1905, the slaughterhouse, which cost an eye-watering one million marks to build, quickly acquired a reputation as the best in East Asia. However, expectations that meat exports could further German commercial interests appear to have played a subordinate role in the endeavor—the slaughterhouse was built primarily to police the overlapping boundaries between Chinese producers and German consumers that meat-eating unavoidably involved.

While there are no records that detail the process by which the Qingdao abattoir came to be built, the slaughterhouse clearly adhered to some basic principles that underpinned the construction of German abattoirs. First, the slaughterhouse was located outside the town, reflecting the need to prevent the spread of disease to other animals kept in the vicinity. Second, the abattoir was constructed with connections to the railroad in mind, making it possible to prevent disruption to the general urban traffic. Third, the slaughterhouse separated the stockyard from the slaughterhouse itself, making it possible to limit infection and maintain cleanliness. Fourth, the slaughterhouse was built with further expansion in mind. Located on the west coast and near a harbor, it did not hinder the expansion of the town farther to the east. Built in the shape of a square, where the front faced the main thoroughfare, there was space for further development on the three remaining sides. Finally, the slaughterhouse stored sufficient supplies of water, which was needed in abundance to flush out to sea the significant amount of excreta and blood intrinsic to the slaughtering process.

Significant attention was also paid to the interior design of the slaughterhouse, especially with regard to setting up a transportation system that combined rails, winches, and pulleys. One major advantage of this arrangement was that it obviated the need for human hands to repeatedly use winches for hoisting weighty animal bodies. Once animals were hooked up to the rails, the suspended bodies could proceed along the tracks. Contact with the floor was thus avoided, making it possible for bodies to move seamlessly and in one direction between the different rooms as they awaited dissection, inspection, and refrigeration. A second advantage of the transportation system was that the efficiency of the slaughterhouse increased as its reliance on winches decreased. Spatial requirements could thus be reduced, and slaughterhouses could be made one-fifth or one-sixth the size of conventional slaughterhouses. A third advantage of the transportation system was that the final product improved. The meat looked more appetizing; it did not spoil or lose shape as easily; and the losses that had bedeviled older practices were reduced. In his handbook, the architect Oskar Schwarz praised the transportation system developed by Beck & Henkel in Kassel that was installed in Qingdao.
Railroads and Meat Exports

Located close to the main station at Qingdao, the slaughterhouse benefited from the development of the railroad. Financed by German banks and built by German engineers, in 1904, the Schantung Eisenbahn Gesellschaft completed the line between Jinan and Qingdao—a distance of 494 kilometers—making it possible to travel between the two towns in just 12 hours, when previously the journey had taken 10 to 12 days.45 As Table 1 shows, the number of transported livestock gradually increased. By 1907, the volume had reached a staggering 26,214 large and 9,400 small animals per year. Such was the popularity of cattle that the Shandong provincial government attempted to restrict the numbers being traded for fear that vital farm work would grind to a halt on account of the dwindling amount of available bovine labor.46 Between October 1905 and October 1906, a total of 15,600 animals were brought into Qingdao, of which 6,621, or 42 percent of all livestock, were transported by rail. However, not all the livestock transported on the Shandong Railroad were destined for Qingdao: a significant proportion were transported between the different provincial towns that served as intermediate stops. Yet more than one-third of all livestock carried, according to 1906 figures, ended up in Qingdao.47 When the Tianjin–Pukou line was completed in 1912, which linked Jinan and Peking, access to animal bodies in north China increased further. Thanks to the railroad, livestock in Shandong and beyond were opened up for major economic exploitation.

Table 1: The Number of Livestock Transported on the Shandong Railroad, 1904-08

<table>
<thead>
<tr>
<th>Year</th>
<th>Large Animals</th>
<th>Small Animals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1904</td>
<td>298</td>
<td>5</td>
</tr>
<tr>
<td>1905</td>
<td>1,538</td>
<td>722</td>
</tr>
<tr>
<td>1906</td>
<td>7,595</td>
<td>374</td>
</tr>
<tr>
<td>1907</td>
<td>26,214</td>
<td>9,400</td>
</tr>
<tr>
<td>1908</td>
<td>19,428</td>
<td>20,136</td>
</tr>
</tbody>
</table>


Upon completion of the railroad, the number of livestock brought to the abattoir in Qingdao steadily increased; however, most were destined for export through the newly developed port to Vladivostok, Manila, Shanghai, Dalian, and other parts of China.48 During the early twentieth century, it appears that most animal bodies were transported

45 Leutner and Mühlhahn, Musterkolonie, 387.
46 Asada, Doitsu tōchika no Chintao, 135.
48 Dubois, “Pasture to Plate,” 38.
alive on ships. This accounts for the discrepancy between the numbers transported by rail and the numbers processed in the Qingdao slaughterhouse. As Russia (the main driving force behind escalating demand for beef) introduced refrigerated ships on the relatively short route that linked Qingdao and Vladivostok, this discrepancy was gradually resolved, and the slaughterhouse was increasingly tasked with the preparation of fresh meat for shipment to Siberia, as evidenced by the installation of more refrigeration facilities in the slaughterhouse.\(^4\) By the second decade of the twentieth century, the fresh meat trade boomed, especially with Russia during the winter months.\(^5\) Following a decade of modest increases, the number of all animals slaughtered exceeded 20,000 in 1910 before peaking at 45,420 on the eve of the First World War.

**Table 2 The Number of Livestock Slaughtered at Qingdao, 1901-1914**

<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1901</td>
<td>9,180</td>
</tr>
<tr>
<td>1902</td>
<td>11,913</td>
</tr>
<tr>
<td>1903</td>
<td>13,614</td>
</tr>
<tr>
<td>1904</td>
<td>14,991</td>
</tr>
<tr>
<td>1905</td>
<td>14,849</td>
</tr>
<tr>
<td>1906</td>
<td>14,566</td>
</tr>
<tr>
<td>1907</td>
<td>11,142</td>
</tr>
<tr>
<td>1908</td>
<td>16,261</td>
</tr>
<tr>
<td>1909</td>
<td>18,210</td>
</tr>
<tr>
<td>1910</td>
<td>20,955</td>
</tr>
<tr>
<td>1911</td>
<td>21,716</td>
</tr>
<tr>
<td>1912</td>
<td>28,571</td>
</tr>
<tr>
<td>1913</td>
<td>45,420</td>
</tr>
<tr>
<td>1914</td>
<td>29,288</td>
</tr>
</tbody>
</table>

**Source:** Japan Center for Asian Historical Records (JACAR) Ref. B07090858200: Seitō Shubi gun minsei bu. Seitō tojyū jo (March 1918), 0027.

The rising number and concentration of livestock being transported changed the nature of the risks posed by infectious animal disease. In the pre-railroad era, the number of livestock arriving in Qingdao was relatively small, the places from which they had been driven were geographically limited, and the movement of animal bodies was slow and varied. However, as the railroad became the preferred mode of transportation, the number of livestock increased, the origins of livestock diversified, and the movement of animal bodies

\(^4\) Denkschrift betreffend die Entwicklung des Kiautschou-Gebiets von Oktober 1907 bis Oktober 1908 (Berlin, 1909), 42.
\(^5\) Bundesarchiv Freiburg (BArch-F), RM3/7133: Kiatschou im Jahre 1912.
became swift and uniform. Such a change brought with it both risks and opportunities. The European experience had already demonstrated how the development of an international rail network helped spread infectious disease more rapidly and widely. Similarly, the expanding railroad network in northeast China elevated the threat of epizootics in Qingdao because the railroad helped penetrate the “hinterlands”—an area notorious for virulent epizootics such as rinderpest—that cattle would be brought to market in Jinan. Yet the railroad, because it made the compilation of statistical information possible, also provided public health authorities with a better map of the movement of animal bodies. The railroad also made it possible for veterinarians to concentrate on the main checkpoints at which livestock arrived. Disembarking in bulk, livestock could be herded speedily to quarantine from the railroad station and, if destined for shipment as fresh meat, taken to the nearby slaughterhouse.

Contesting Veterinary Expertise

For the veterinarians who managed the slaughterhouse, the increasing popularity of the meat trade elevated their standing as scientists, and the slaughterhouse, which provided veterinarians with an abundance of healthy and diseased animal bodies as specimens, became a place for the production of scientific knowledge. As Max Eggebrecht, Rassau’s successor, reflected, prior to the opening of the abattoir there had been “little time for scientific work.” When the public slaughterhouse was opened, working conditions radically changed: veterinarians gained access to a fully equipped laboratory, library, and the tools for microscopic analysis that made it possible to research and manufacture serums for inoculations. As the slaughterhouse became a one-stop station for the inspection of thousands of animal bodies, Eggebrecht, who had studied bacteriology in Berlin in 1903, could construct an authoritative map of epizootics across Shandong Province and extrapolate beyond it to the rest of northeast China. In his observation of rinderpest, Eggebrecht belittled the Chinese statistics on the disease, condemning them as wholly unreliable, imprecise, and incomprehensive. Lacking the kind of controlled and hygienic environment that the Qingdao slaughterhouse boasted, where precise and reliable measurements could be conducted, he poured scorn on the credibility of Chinese diagnoses.

Such increased confidence about veterinary expertise accounts for why Eggebrecht took a daring step in 1909 to propose widening the erstwhile local scope of sanitary measures. A few years earlier, rinderpest had wiped out the German and Australian bulls that had been imported as part of the dairy cattle breeding program. Preventative measures, inoculation

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51 Rinderpest is an acute, highly contagious viral disease of ruminant animals, primarily cattle, which used to pose a major threat to livestock economies across the globe.
53 Denkschrift betreffend die Entwicklung des Kiautschou-Gebiets von Oktober 1904 bis Oktober 1905 (Berlin, 1906), 33.
54 Eggebrecht, “Rinderpest,” 60.
55 Ibid., 61.
included, had turned out to be ineffective. Determined not to repeat earlier mistakes, Eggebrecht moved to demand greater controls on the movement of bovine bodies, asserting that “cattle driven from the interior of Shandong Province” should be barred from entering the leased territory. In doing so, the veterinarian pointed the finger at the practice of driving cattle by land rather than transporting them by rail. He argued that such “unchecked freedom in the traffic of cattle” elevated the risk of epizootic outbreaks among Qingdao livestock, which were typically turned out to graze on the outskirts of town. To prevent infections and to ensure the success of the breeding experiments, Eggebrecht co-opted the railroad as a tool of defense. He believed that it should be made mandatory for traders to transport all livestock by rail, which made it easier to ascertain and control the movement of animal bodies. Recommending the small port station of Ritthausen as an offloading point for all newly arriving cattle, Eggebrecht lauded its geographical advantages. Its location next to the sea provided a “natural barrier” against infection while the railroad itself functioned as an artificial border that would minimize the spread of disease to the east. As part of these bold measures, Eggebrecht also pleaded to make it obligatory to inoculate all cattle arriving in Qingdao and called for the mass manufacture of serums, requesting six heads of oxen that would act as donors.

German physicians vehemently objected to the broad scope of the veterinary proposals and intervened in matters of animal health to reassert their political and scientific authority. Describing the call as going “too far,” Walter Uthemann, the chief medical officer, made it known that such a far-reaching sanitary measure that encompassed the entire territory “should not be contemplated at all.” In general, the proposal was unfeasible. Making Chinese traders obey such a regulation would waste time and money. Physicians also pointed out that Shandong cattle were resistant to rinderpest anyway; thus, it made little sense to inoculate them against a disease for which they were already immune. Rather than concern themselves with Shandong cattle, veterinarians should limit themselves instead to keeping a firm eye on imported German stock. Making sure that imported cattle were inoculated in places en route to China, such as Egypt and Hong Kong, would be sufficient. For this reason, Martini, another medical officer, went as far as to argue that discussion about the spaces in which inoculated German cattle should be kept was superfluous. As he put it, “The only feasible way lies in inoculation. Thus, it is not necessary to place much weight on the choice of location with regard to the stalls.” Such criticism led to an exchange of abusive language from both professions. As a result, the proposals to extend boundaries were abandoned, reflecting the relatively weak position of veterinarians in the colonial apparatus.

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57 Ibid.
58 BAch-B, RA86: Letter from Gouvernementsarzt Uthemann, December 20, 1909.
The Problem of Livestock Production: The German Experience

Fundamental to shaping this focus on the local was the German assessment of Kiautschou—the German name for the territory—as a colony. Compared to the German Empire’s other colonial possessions, notably in Africa, the Chinese colony was overwhelmingly a commercial—not agricultural—enterprise. Peasants who made up most of the inhabitants were subsistence farmers who were uninterested in breeding animals for broader markets. Once their value as sources of traction deteriorated, local farmers would simply replace them with draught animals that had been bred and reared in the interior of Shandong. Such dependence on animal resources in Shandong Province was shared by the colonizers. To satisfy European appetites for milk and meat, the Germans had little choice but to source food animals locally. For this reason, when compared to the draconian measures taken back home, a more liberal attitude toward the policing of livestock arriving from the hinterlands of Shandong had to be adopted. Failure to do so not only risked undermining the colonizers’ food security but also threatened their identity as Germans, which they maintained through adherence to a diet that was different from that of the Chinese. Given that there was no livestock industry—broadly conceived—to speak of, such a decision was a relatively simple one to make, despite the efforts of veterinarians to suggest otherwise.

That is not to say that the Germans were uninterested in livestock breeding more generally, especially after the foundation of the German-Chinese University (Deutsch-Chinesische Hochschule) in 1909, which was meant to impart German science and engineering knowledge to the locals. Two years after its opening, the authorities decided to add a third department for agriculture and forestry, with Wilhelm Wagner as its head. Comprising four courses in the fields of agriculture, forestry, veterinary medicine, and horticulture, the department erected facilities for animal husbandry, including an experimental station where studies were conducted into the crossing, breeding, and feeding of German and Chinese domestic animals.\(^{60}\) Three Jeverland cattle, two native Chinese cows, and three half-breeds were kept. Stopped abruptly by political events, Wagner nonetheless managed to publish the results of his research into Chinese agriculture in 1926.\(^{61}\) His work revealed that the physiological characteristics of Chinese cattle left a lot to be desired. On average, Chinese cattle weighed approximately 322.9 kilograms—a fact that compared unfavorably to the heavier German cattle. Upon slaughter, relatively little meat could be harvested. Comparing Chinese breeds with European ones, Wagner was emphatic in his conclusions: “When one compares the figures...one cannot for the moment doubt that the Chinese cow can complete at all with the European breeds with regard to its fatness.”\(^{62}\) To be sure, the governor-general did promote the export of cattle, dreaming of transporting livestock to Europe on journeys that were two weeks shorter than similar trips made from Shanghai. Given Wagner’s gloomy assessment, however, such a plan would not have involved livestock the Germans themselves would have bred and reared.


\(^{62}\) Ibid., 576.
The Japanese Appetite for Beef

Any plans the German colonizers had in store for the leased territory came to an abrupt halt with the outbreak of the First World War, which presented the Japanese with the opportunity to wrestle control of Jiaozhou Bay from the Germans.\(^63\) Unlike their European counterparts, the Japanese immediately recognized the potential offered by bovine resources in northeast China, chiefly as meat—not least because they had already pursued business interests under the noses of the Germans. As early as August 1915, the *Peking Daily News* had reported on the steps being taken in Kobe, Japan, for the construction of a tinned beef factory. Captain Hino, a military advisor to the Chinese government, could barely contain his excitement. He boasted that the combination of cheap labor and inexpensive meat that could be derived from the abundance of cattle in Shandong almost certainly guaranteed that profit could be made.\(^64\) Two years after this report, the occupying Japanese army was also enthused by the massive bovine resources the province seemed to promise, estimating that Shandong alone boasted 600,000 head of cattle with millions beyond its borders.\(^65\)

Importing Shandong cattle and beef from Qingdao also made economic sense. In a feasibility study conducted by the Japanese military government, Qingdao compared favorably with other places such as Tianjin, Nanjing, and Pukou.\(^66\) At 2 yen 50 sen per head, Tianjin was the most inexpensive location for shipping but was inferior to Qingdao because its port froze over during the winter months—the period of the year when beef was most in demand back in Japan. In the case of Nanjing, the existence of a large slaughterhouse and refrigeration facilities made the metropolis an attractive proposition, but it was located too far away from the main livestock market at Jinan. Ultimately, the military government concluded that Qingdao was the best location for the beef trade because of its railroad link to Jinan, its state-of-the-art slaughterhouse, and its ice-free port through which regular supplies of fresh meat could be shipped all year round. No interest was expressed, however, in the province’s dairy-producing potential. This reflected the relative success of the Japanese agricultural sector’s increasing milk production in contrast to its struggle to provide similar amounts of beef.

One reason for this hunger was the association that had been forged between meat—especially beef—and modernity.\(^67\) As part of its drive toward Westernization, the Meiji-era (1868–1912) elites vigorously promoted the consumption of meat and dairy—neither of which had previously been a major part of the indigenous diet—because they were seen to be more nutritious than the typical Japanese fare that consisted mainly of plant-based

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\(^63\) At the bequest of the British, who were keen to nullify the German naval threat in Asia-Pacific, the Japanese launched an attack on Qingdao shortly after the outbreak of the First World War, hoping to increase their own presence on China soil.


\(^65\) Japan Center for Asian Historical Records (JACAR), Ref. C03024621100, Military Archives, “Chintao no genkyō (April 1917),” sheet 0734.


ingredients. By the end of the nineteenth century, taboos about meat-eating as defilement, especially in rapidly expanding towns and cities, had evaporated, and meat had become an accepted—albeit peripheral—part of the Japanese diet, thanks to the popularization of dishes such as beef pot. Not insignificant in the arguments elites put forward was the reference to the Chinese as predominantly eaters of pork. Intellectuals pointed to this eating habit, as well as to the fact that many Indians were vegetarians, to show that it was beef that enabled the British to assert their dominance in many parts of Asia. Rubbing shoulders with the advanced West thus meant the procurement of affordable beef, the production of which was limited in mountainous and population-dense Japan. With the chief exception of Hokkaido, Japan had neither sufficient tracts of arable land to cultivate crops that could adequately cater to both human and animal needs nor enough flat spaces in which large herds of cattle could be kept. Consequently, production costs for domestic beef were high, hindering its take-up among the broader population. To an extent, demand could be met by Korea, which had already become a colony. Yet most of the Korean cattle were sought after as sources of labor on Japanese farms. It was only after their time was up as draught animals that they were then slaughtered to provide beef for Japanese stomachs. This explains the expectations heaped on Shandong cattle in general and Qingdao beef in particular as a new source of cheap energy to power Japanese imperial bodies in much greater numbers than had hitherto been possible.

Rendering Chinese Meat Fit for Japanese Consumption

The Japanese ability to see the sanitary significance of the German-built slaughterhouse grew as quickly as their economic appreciation of Shandong’s bovine resources. In 1915, Matsubara Kiichirō and Matsuo Hiroshi, both veterinarians, rushed to pen pieces about the slaughterhouse. They marveled at the scale, technology, and coordination that made the slaughterhouse the best in East Asia. Matsubara gleefully remarked that when the abattoir was operating at its limit, it was able to process 2,000 head of livestock in a single day, including a maximum of around 400 cattle—the processing of animal bodies could even take place late into the night. Similarly striking was the system of chains and pulleys operating on rails that wound its way around the interior and rendered meaningless the weight of animal bodies. Equally significant was how water was an integral part of the operation. To keep the interior spotlessly clean, a plentiful supply of fresh water—the volume and temperature of which could be controlled—was available. Finally, the Japanese were impressed by the rules that governed the interactions between human and animal bodies. Detailed protocols governed when, where, how, and by whom livestock were to be slaughtered, body parts stripped, contents inspected for signs of disease, passed fit for human consumption, moved, moved,

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cleaned, and stored. Most significantly, Chinese workers could be drilled to disturb as little as possible the smooth flow of processing animal bodies. As Matsuo aptly put it: “rules during the German era were as strict as they could be.”71 The majority of the rules and regulations that the Germans had laid down the Japanese studiously adopted. The fact that many Japanese veterinarians had either studied in Germany or received instructions from those who had undoubtedly facilitated their acceptance.

Despite these glowing reports, the Japanese still saw areas for improvement— not in the interior of the slaughterhouse, but in the spaces that surrounded it.72 One major change the Japanese introduced was to construct a covered area for biopsies. Since veterinary inspection of live animal bodies had previously taken place in the stockyard, the weather periodically interfered with inspection. This was a problem, especially during the winter months when the slaughterhouse was at its busiest and its most profitable. Not only could operations be severely disrupted, the controlled conditions under which veterinary examination took place could also be compromised; it was vital for the production of reliable veterinary knowledge that conditions were constant throughout the year.

Another improvement the Japanese introduced was to change the flow of movement of animal bodies between the stockyard and the slaughterhouse. Under German rule, livestock had been led directly from the stockyard through the main gates to their places of slaughter. As large numbers of animals loitered and waited their turn, excrement and urine would quickly accumulate, clogging up the central space in the premises and generally disrupting human and animal traffic. To solve this problem, the Japanese forced livestock to take a

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71 Matsuo, “Kansei chintao tojō,” 34.
detour and enter the premises through a side entrance, where discharged animal matter presented less of a nuisance.

Finally, the Japanese made changes to the water supply. Under the Germans, supplementary supplies of water were stored in a tank, where germs easily accumulated. The Japanese improved it by connecting the slaughterhouse to the water supply and adding ventilation to keep the water as fresh as possible. Common to all these measures was how the Japanese tended to target the **surroundings** of the slaughterhouse. Concerned as the Germans were about perfecting the slaughterhouse itself, where the movement of animal bodies was placed under exacting levels of control, they had given less thought to the spaces in which animal bodies moved before their actual slaughter. Building upon the German foundations, the Japanese veterinarians could devote their time and effort to extending the sanitary boundaries of the slaughterhouse complex.

**Empowering Veterinarians**

Despite the praise heaped on and improvements made to the slaughter process, the export of cattle and beef to Japan was not inevitable. Japan’s concerted drive to become a meat-eating nation was hampered by the invasion of major epizootics originating from China and Korea from the 1870s. In the case of rinderpest, an outbreak was recorded virtually every year since 1900, inflicting significant economic damage on agricultural activity as it made its way from the south to the north of the country. Upon their takeover of Qingdao, the Japanese thus brought with them a historically conditioned skepticism of imported Asian animal products. Between 1915 and 1918, these fears were duly confirmed when a total of 226 cases of infectious animal disease were detected. Citing issues of reliability, the Committee of Port Veterinarians (Kōmu jūkan kaigi) expressed its dissatisfaction with the serums being injected into live cattle and banned this practice. Yet, after the end of the First World War, as meat prices skyrocketed, such concerns took a backseat. Faced with escalating pressures, Yamawaki Keikichi, a veterinary officer who witnessed the discussions, remembered how “purely scientific” recommendations were replaced with “flexible and practical measures of prevention.” At a meeting convened by the Ministry of Agriculture and Commerce on July 7, 1919, veterinarians hastily decided to make mandatory the inoculation of all cattle earmarked for export to Japan.

Crucial to this policy reversal was that Japanese veterinarians would be placed in charge of engineering and administering the serum, the manufacture of which the Russians had previously monopolized. In 1918, experiments conducted on several hundred cattle in Jinan and Qingdao revealed the ineffectiveness of the Russian-made serums. In contrast, the serum produced by the Rinderpest Manufacturing Facility (Gyūki kessei seizōjo) in Busan,

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75 Ibid., 46.
Korea, proved to be more reliable. It was here in 1917 that a group of leading Japanese veterinarians successfully came up with a rinderpest serum that was effective for six months, making it possible to buy the time that was needed to export and slaughter cattle for the Japanese market. For the first year or so, the ministry decided to request a one-ton supply of serum from the Korean governor-general. Given the large amount that would need to be generated, this arrangement proved to be temporary. After a short period of considering self-manufacture in the slaughterhouse, the Qingdao authorities decided to provide subsidies to a company that would be tasked with the production of serums instead.  

Established as the Shandong Drugs Research Center (Santō yakubutsu kenkyūjo), the delivery of serums began in 1921. Similar to the Rinderpest Manufacturing Facility, which married imperial and veterinary interests for the purposes of taming and exploiting Korea’s bovine resources, the Shandong Drugs Research Center was also designed to serve a combination of Japanese imperial, scientific, and commercial interests—but in China. Similar to the port town of Busan, Qingdao functioned as a collection point for animal bodies, primarily cattle, presenting a range of diseases that not only represented a threat but also an opportunity for amassing research material. Securing this kind of wealth and breadth of cattle, horses, pigs, and dogs back in Japan was deemed impossible, but due to its geographical proximity to the interior of Shandong, Qingdao was the ideal laboratory for the science of animal health. Through the provision of serum, the Shandong Drugs Research Center thus fulfilled an important role in taming and exploiting Shandong cattle, where Chinese bovine bodies could be cleansed and rendered fit for consumption by Japanese bodies.

**Shipping and Meat Exports**

Establishing the background is important to understand the complicated nature of cattle and beef exports from Qingdao. As Table 3 demonstrates, the First World War had a devastating impact on the live cattle trade with Russia. In 1915, the Japanese military government in Qingdao experimented with exporting 99 head of live cattle to the port of Yokohama, but it was not until 1919 that the trade was resuscitated, with Japan emerging as the main trading partner at the expense of the Russians. More significant is the parallel development in the fresh beef trade, the exports of which quickly grew to surpass those of live cattle. Numbers were already exceeding 10,000 heads by 1919 and grew exponentially to reach more than 40,000 by 1921, peaking at more than 65,600 in 1928. In fact, the meteoric rise in the volume of fresh beef exported was at the expense of the live cattle trade, which had peaked in 1920 and never recovered.

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78 Ibid., 64–65.
Table 3: The Number of Exports of Live Cattle and Fresh Beef from Qingdao, 1912-1930.

<table>
<thead>
<tr>
<th>Year</th>
<th>Heads of Live Cattle</th>
<th>Heads of Fresh Beef</th>
</tr>
</thead>
<tbody>
<tr>
<td>1912</td>
<td>16,665</td>
<td>--</td>
</tr>
<tr>
<td>1913</td>
<td>28,413</td>
<td>--</td>
</tr>
<tr>
<td>1914</td>
<td>17,542</td>
<td>--</td>
</tr>
<tr>
<td>1915</td>
<td>3,972</td>
<td>--</td>
</tr>
<tr>
<td>1916</td>
<td>933</td>
<td>86</td>
</tr>
<tr>
<td>1917</td>
<td>263</td>
<td>662</td>
</tr>
<tr>
<td>1918</td>
<td>544</td>
<td>7,656</td>
</tr>
<tr>
<td>1919</td>
<td>2,422 (1,648 to Japan)</td>
<td>12,647</td>
</tr>
<tr>
<td>1920</td>
<td>13,192 (11,565 to Japan)</td>
<td>33,268</td>
</tr>
<tr>
<td>1921</td>
<td>3,423 (to Japan only)</td>
<td>41,770</td>
</tr>
<tr>
<td>1922</td>
<td>6,721 (to Japan only)</td>
<td>49,155</td>
</tr>
<tr>
<td>1923</td>
<td>4,918</td>
<td>62,772</td>
</tr>
<tr>
<td>1924</td>
<td>2,582</td>
<td>52,177</td>
</tr>
<tr>
<td>1925</td>
<td>1,048</td>
<td>45,177</td>
</tr>
<tr>
<td>1926</td>
<td>307</td>
<td>57,435</td>
</tr>
<tr>
<td>1927</td>
<td>--</td>
<td>64,604</td>
</tr>
<tr>
<td>1928</td>
<td>--</td>
<td>65,194</td>
</tr>
<tr>
<td>1929</td>
<td>--</td>
<td>54,692</td>
</tr>
<tr>
<td>1930</td>
<td>--</td>
<td>58,865</td>
</tr>
</tbody>
</table>


Such a mixed picture reflected the rushed policy to fast-track the export of risky live cattle before refrigeration technology had been sufficiently introduced on ships. The fact that the Ministry of Agriculture had mandated inoculation in the first place was because it was necessary to ensure that live cattle survived the long and treacherous voyage from China to Japan without succumbing to infectious diseases while onboard. The transportation of live cattle, especially during the summer months, could also be financially risky. In the case of one ship, *Kantonmaru*, which was loaded with 471 cattle and set sail in August 1922, the impact of the weather was devastating.79 A combination of sizzling heat and nearly typhoon-strength winds caused the death of 110 head of cattle onboard. Such risks were reduced when transporting fresh meat, since more could be packed in the hull of ships; it was especially profitable in the winter as the space that had to be reserved for ice could be freed up to accommodate greater quantities of meat. In the case of the *Nikkōmaru*, the largest ship owned by the shipping company Nihon Yūsen, the equivalent of 1,200 head of

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79 Jūeki chōsa jo hōkoku daisanji hokoku (Tokyo: Jūeki chōsa jo, 1923), 32.
cattle could be crammed in during the winter months while only 700 could be carried in the summer. For these reasons, once refrigerated shipping became common and reliable, it was only a matter of time before the live cattle trade petered out. Not surprisingly, the Shandong Drugs Research Center quickly fell into financial trouble as a result, as demand for its serums plummeted. In contrast to Korea, which continued to export live cattle as a source of Japanese farm labor, the attraction of Shandong cattle was as food—it was as meat that Chinese cattle commanded value on Japanese markets.

In contrast to the German interest in the railroad, the Japanese tended to concern themselves more with the technicalities of shipping. Predicting the mass transportation of fresh meat on refrigerated ships, the military government in Qingdao pointed to how the slaughterhouse would need to synchronize its operations with shipping schedules. They anticipated that requests would be made that involved the quick and large scale slaughter of “hundreds” of cattle, which would also have to be frozen in preparation for shipment. Later, as the meat trade gathered pace and the number of refrigerated ships carrying fresh meat increased, shipping routes were shortened. No longer did ships make time-consuming stopovers at Ujina, in Hiroshima, and travel times were shortened by a few days to ensure faster turnovers, save on the fuel needed to power refrigerators, and decrease the risk of spoilage.

At the receiving end, in the ports of Kobe and Osaka, the authorities busily implemented infrastructural improvements. Pointing to instances of spoiled meat, the Qingdao meat merchants also pressured the port authorities to shorten the time it took to offload cargo. Rather than offload freight from ships out at sea, it would be better, they argued, for ships to dock at a floating pier, from which boxes of fresh meat could be carried quickly and directly into refrigeration facilities. Such a cold-chain operation was already in place in countries such as Australia and the United Kingdom, and these places were lauded as examples for Japan to emulate. In response, the Kobe Port Authorities pointed out that ships were already shifting to this new mode of offloading cargo, leading to significant amounts of time being saved.

**Contesting Medical Expertise**

As the trade in fresh meat boomed, the abattoir as a facility acquired greater importance, becoming a major sticking point for Japanese commercial and scientific interests as diplomatic developments placed Japan under international pressure to return Qingdao to the Chinese, which eventually took place in 1922. Like the Germans, the Japanese were deeply

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84 JACAR, Ref. B07090848000, Foreign Affairs Archives, “Chintao seigyū namaniku kumiai seigansho (June 1921).”
suspicious of the locals when it came to meat inspection, criticizing Chinese merchants for their blasé attitudes toward the handling of livestock and deadstock. As Yamawaki put it, Chinese merchants were “fine about killing diseased cattle and eating them and [were] indifferent to outbreaks of animal diseases.”

This view underpinned the objections to handing over the slaughterhouse to the Chinese. Most vocal were Japanese beef merchants who made concerted efforts to keep the abattoir as it was—as a public facility, costs for inspection and slaughter could be kept low. Closely tied to this financial argument, however, was a concern about the strictness of inspection, which the Japanese feared would be compromised if the operation of the slaughterhouse were handed over to the Chinese. Ever since the Japanese had assumed control of the abattoir, steps had been taken to introduce an inspection regime that involved pre- and post-slaughter inspection. The chief veterinarian of the slaughterhouse, Iseyama Hanzaburō, argued that such rules reflected the desire to protect human and animal health, and he reminded the authorities that it was because the rules were so strict that exports had been historically permitted in the first place.

Eventually, ownership of the abattoir was handed back to the Chinese, but as a result of these lobbying activities, Japanese veterinarians retained control over inspection.

In time, the fact that the vast majority of exports were in the form of meat—not livestock—gave rise to bureaucratic and professional conflict in the early 1930s. The Ministry of the Interior, responsible for human health in the hands of physicians, called on the Ministry of Agriculture, responsible for the policing of animal health in the hands of veterinarians, to relinquish its control of meat inspection. Pointing to statistics that showed that 60,000 head of cattle were now being shipped as fresh meat from Qingdao as opposed to just 70 head of live cattle, the Ministry of the Interior complained that it had its work cut out. While meat inspection in Japan increased, the inspection of live animals lay idle. The response of the Ministry of Agriculture was as curt as it was critical. Meat came from animals, it reminded its bureaucratic counterpart, the health of which had to be subjected to veterinary inspection before it could be transformed into meat fit for human consumption. It also exploited historical arguments. Northern China, it pointed out, was home to countless diseases that could easily spread and threaten Japanese economic interests. The main purpose of having Japanese inspection in Qingdao lay in the advantages that it had as an early warning system that would flag the development of epizootics—concerns about human health were thus secondary. The fact that pre-slaughter veterinary inspection had been put in place at all was to confirm—despite the risks that China posed—the safety of exports in the face of increased demand for meat back in Japan.

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85 Yamawaki, Nihon teikoku kachiku densenbyō yobō shi, 32.
The Problem of Livestock Production: the Japanese Experience

For most of the period under review, the Japanese, despite their growing appetite for beef and avid interest in exploiting the bovine resources of Shandong, did not seriously involve themselves in the breeding of cattle. However, the situation began to change in the late 1920s and early 1930s. Under the guidance of the Japan Chamber of Commerce, indigenous breeding practices were improved. Selective breeding programs witnessed the importation of Japanese bulls, which were then crossed with indigenous cows in an effort to improve the quality and the quantity of the resulting meat. However, the Japanese complained strongly about Chinese breeding practices. They bemoaned the fact that selective breeding was virtually unheard of and despaired at the haphazard way the Chinese went about choosing their cows. Pessimism about animal husbandry in Shandong increased as the Chinese authorities clamped down on the cattle trade, imposing tariffs on sales in order to prevent the flight of animal labor.\(^{87}\) Political instability also sapped Japanese enthusiasm for Shandong cattle. In 1928, as anti-imperialistic sentiments ran high, armed conflict broke out between the Japanese Imperial Army and Kuomintang’s Northern Expeditionary Army in Jinan. This incident was just one major example of a series of smaller conflicts that impacted the stability of the meat trade. Not only did Jinan, as the main livestock market in the region, suffer from political instability, but breeders, fearing for their lives and livelihoods, were also forced to migrate north.

In light of these circumstances, the Japanese looked to the even greater, yet still vastly untapped, bovine resource that was Manchuria, which, by the mid-1920s, placed third in the number of livestock after the United States and Australia. In contrast to the hesitation that characterized efforts at improvement farther south in Qingdao, the Japanese in Manchuria took an early interest in the breeding of livestock.\(^{88}\) In 1907, the Kwantung administration had established an experimental farm in the port of Dairen, which was later moved to a larger site near the town of Jinzhou in 1924. In 1913, the South Manchurian Railway Company (SMR), going further than the Shandong Railroad Company ever did, followed suit with the foundation of the largest agricultural station in Manchuria, encompassing more than 200 hectares near the town of Gongzhuling, which was 650 kilometers from the port of Dairen. Both facilities boasted staff in their hundreds, and gradually, by the early 1920s, concerted efforts were made to improve the poor condition and small stature of Chinese livestock in general. To this end, animals were imported from across the Japanese Empire and beyond for crossbreeding programs.

When the SMR founded the Animal Disease Research Institute at Mukden, located in central Manchuria, in 1925, a new phase was entered. Tasked with investigating such epizootics as rinderpest, anthrax, and foot and mouth disease, the Institute manufactured serums that would contribute to combating disease and making Manchurian cattle

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87 Dubois, “Pasture to Plate,” 36.
(mangogyū) fit for consumption by Japanese bodies. By the end of the 1920s, the export of Manchurian cattle thus became a distinct possibility. Compared to previous undertakings in Busan or Qingdao, the taming of Manchurian livestock—a hotbed for a variety of epizootics—represented a different prospect. Neither Busan nor Qingdao had been sources of endemic epizootic disease, the policing of which in both places had been directed at livestock being brought in from the interior, increasingly by rail. As coastal locations, their geographical conditions were vastly different, too. How Manchurian cattle were tamed, considered fit for Japanese bodies, and transported as Japan colonized this region are questions that extend beyond the scope of this article; but it certainly built on the experience and knowledge forged in Qingdao.

Conclusions

Over the first three decades of the twentieth century, Qingdao became a major hub for the exploitation, processing, and taming of Chinese animal bodies for the production of food destined for European and Japanese consumption. Common to both periods of German and Japanese colonial rule and influence was the extent to which a combination of disgust at the unhygienic habits of the indigenous population and the threat of infectious animal diseases emanating from the interior of Shandong Province shaped the construction of a public inspection regime that conferred on veterinarians the power to realize the stable, safe, and adequate supply of food animals, cattle in particular, for the consumption of non-Chinese people. As a result of the Germans introducing and then the Japanese improving upon inherited technologies and protocols—such as the railroad, the slaughterhouse, and ships—an increasing number of animal bodies, particularly in the form of meat, became an economic resource, the movement of which—dead or alive—was subjected to spatial, temporal, and sanitary controls. However, the Germans and the Japanese struggled to cope with the challenges posed by epizootic threats caused by the mass transportation of animal bodies by rail or sea, expressed frustration at the “backward” nature of Chinese treatment of animal bodies, and attempted unsuccessfully to improve livestock production in a region that had little prior tradition of engaging in animal husbandry.

Despite these commonalities, the German and Japanese negotiation of animal bodies differed widely. At its most fundamental, the difference manifested itself in the German focus on the provision of milk for local consumption and the Japanese interest in meat, especially beef, for consumption back in Japan. In the case of the Germans, despite mooting the idea of comprehensive inoculation, the focus was on the locally informed conservatism regarding veterinary interventions that implicated the broader province of Shandong. That contrasted with the approach of the Japanese, who were more willing to intervene in bovine bodies and took to import and then manufacture serums for use in a comprehensive program of inoculation. Some of this can be explained by the relative standing of medical and veterinary expertise at the time. Whereas veterinarians assumed a subordinate position to physicians during German rule, Japanese veterinarians enjoyed more clout. Due to the early interest in meat, as well as the existence of a state-of-the-art slaughterhouse, Japanese
veterinarians functioned as important scientists from the very beginning of Japanese rule. They quickly reported on the German-built abattoir, were influential in undertaking initial conservative assessments of exporting live cattle and were at the forefront of the decisions to relax policies as domestic circumstances changed. Japanese veterinarians also benefited from a broader imperial network of veterinary expertise that could be relied upon to provide more effective serums, for example. Thus, when it came to handing back control of the abattoir to the Chinese, veterinary arguments were exploited effectively and played on fears about the dangers of epizootics. They were also effective when the Ministry of the Interior attempted to wrestle control of meat inspection from the Ministry of Agriculture’s veterinarians.

In the end, as the Japanese faced the limits of Qingdao as a stable source of meat, they turned to Manchuria as the next frontier from which to satisfy Japan’s growing appetite for beef. While the Germans were narrowly interested in the need to maintain a European diet as colonizers, the Japanese were more broadly interested in embracing meat as modernizers. Moving from the coastal regions of the Asian mainland to its interior, the exploitation of bovine resources and the taming of animal bodies entered a new phase in the 1930s as the Japanese intervened more forcibly in the reproductive process itself.

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