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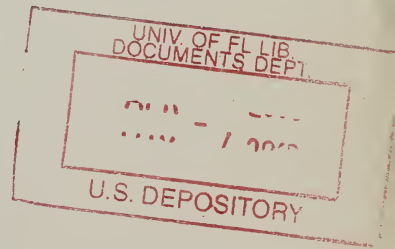
A. D. MELVIN, CHIEF OF BUREAU.

THE GOVERNMENT'S INSPECTION AND QUARANTINE
SERVICE RELATING TO THE IMPORTATION
AND EXPORTATION OF LIVE STOCK.

BY

RICHARD W. HICKMAN, V. M. D.,
Chief of the Quarantine Division.

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INTRODUCTION.

For the protection of the live stock of this country against the introduction of contagious diseases from abroad the Bureau of Animal Industry maintains a system of inspection and quarantine of imported animals. As a further measure of protection, the importation of hides, skins, and certain other animal products, as well as hay, straw, and forage, is also supervised and regulated.¹ This service operates incidentally to keep out certain diseases which are communicable from animals to people, as, for example, Malta fever. In order to promote the country's export trade in live stock and to have this trade carried on under humane conditions, the bureau also inspects animals for export and enforces certain requirements regarding the transportation of such animals on ocean steamers. All this work is under the direct supervision of the Quarantine Division of the bureau.

THE INSPECTION AND QUARANTINE OF IMPORTED ANIMALS.

Although for many years previous to the creation of the Bureau of Animal Industry there had been a growing realization of the need of a Government bureau to foster and protect the live-stock interests, the immediate occasion for the organization of the bureau was the prevalence of contagious pleuropneumonia of cattle. Through lack of protective measures, the contagion of this disease had been repeatedly brought into the United States by cattle imported from Europe, and the disease had spread throughout several eastern States and as far west as Illinois. Great injury was being done by its ravages, and the presence of this and other contagious diseases had led to the exclusion of our animals and meats from foreign markets. The contagion was spreading, and the live-stock industry of the country was seriously threatened.

¹ Some of this work is done in cooperation with the Division of Customs of the Treasury Department. The regulations relating to hides, skins, hide cuttings and parings, and glue stock are issued by that department.

This condition brought about the passage of the act of Congress of May 29, 1884, for the establishment of the Bureau of Animal Industry. The most pressing duty confronting the new bureau was the eradication of contagious pleuropneumonia, and this was finally accomplished after a struggle of several years. No case has occurred in the United States since the spring of 1892.

Concurrently with the inauguration of the campaign against pleuropneumonia, more stringent regulations were promulgated and measures were put into operation with a view to preventing the further importation of diseases from abroad by placing the importation of live stock and their products under more complete governmental sanitary control. Since the passage of the organic act of 1884 additional laws have been enacted from time to time, to which references are made later on in this article. Regulations have been issued and a service of inspection and quarantine maintained.

The regulations regarding the importation of live stock require, in brief, that all horses, cattle, sheep, and other ruminants and swine must be inspected before they are admitted, and, in addition, that all ruminants and swine from any part of the world except North America shall be quarantined. The following table shows the number of animals inspected and the number quarantined during the past five years. Nearly all of the animals admitted on inspection without quarantine come from Canada and Mexico and consist mainly of cattle and sheep for feeding or slaughter, and horses, mules, etc., for work purposes, though some animals from Canada are intended for dairy and breeding purposes. Nearly all of the live stock brought from across the seas are purebred animals for breeding purposes.

Number of imported animals inspected and quarantined during 5 years ending June 30, 1911.

Fiscal year.	Inspected but not quarantined.	Inspected and quarantined.	Total.
1907.....	146,449	1,448	147,897
1908.....	249,396	1,494	250,890
1909.....	233,044	4,760	237,804
1910.....	336,857	9,783	346,640
1911.....	257,351	4,127	261,478
Total.....	1,223,097	21,612	1,244,709

PROVISIONS OF LAWS AND REGULATIONS.

The work relating to the inspection and quarantine of imported live stock is based mainly upon acts of Congress of August 30, 1890 (26 Stat. L., 416), and February 2, 1903 (32 Stat. L., 791). The

former act was slightly amended by section 12 of the tariff act of August 5, 1909, which provides that the importation of neat cattle and of the hides of neat cattle from any foreign country is prohibited, except as to any foreign country or countries or parts thereof concerning which the Secretary of the Treasury shall officially determine and give public notice that importations therefrom will not tend to the introduction or spread of contagious or infectious diseases among animals in the United States. This was a reenactment of that portion of the old law of August 30, 1890, section 9 of which permitted the importation of cattle only on proclamation of the President, the more recent act transferring the authority to the Secretary of the Treasury, which authority is exercised upon the recommendation of the Secretary of Agriculture. Section 10 of the act of 1890 provides that the Secretary of Agriculture shall cause careful inspection to be made of all imported neat cattle, sheep, and other ruminants and swine; and section 6 makes it a misdemeanor to import neat cattle, sheep, and other ruminants and swine which are diseased or infected with any disease or which have been exposed to such infection within 60 days next preceding their exportation. Section 7 authorizes the Secretary of Agriculture to quarantine such imported animals at such ports as he may designate and under such conditions as he may by regulation prescribe, and section 8 prohibits the importation of such animals at any other ports. Section 2 of the act of 1903 authorizes the Secretary of Agriculture "to make such regulations and take such measures as he may deem proper to prevent the introduction or dissemination of the contagion of any contagious, infectious, or communicable disease of animals from a foreign country into the United States."

The regulations now in force are known as Bureau of Animal Industry Order 180, "Regulations for the inspection and quarantine of horses, cattle, sheep, swine, and other animals imported into the United States," issued by the Secretary of Agriculture under date of April 5, 1911. This order designates certain ports of entry on the seaboard and along the international boundary lines through which live stock for importation must be entered. The ports of entry on the Atlantic seaboard are New York, N. Y., Boston, Mass., and Baltimore, Md. These are the most important, as nearly all the live stock brought into the United States from across the seas are purebred animals imported for breeding purposes. Such animals are eligible for entry free of duty under the provisions of paragraph 492 of the tariff act of 1909. It is required that the pure breeding of every animal which is entered free of duty be established; that it shall be purebred of a recognized breed, and duly registered in the book of record established for that breed. The determination and certification of breeding is done by the Animal Husbandry Divi-

sion of the Bureau of Animal Industry. To accommodate business in imported purebred animals for breeding purposes, animal quarantine stations are maintained convenient to the ports named, the station for New York being located at Athenia, N. J., that for Boston at Littleton, Mass., and that for Baltimore at Turner, Md., on the Patapsco River, an arm of Chesapeake Bay, south of Baltimore. These stations are described later on in this paper.

Copies of the regulations may be obtained on application to the Chief of the Bureau of Animal Industry, Washington, D. C.

KINDS OF ANIMALS.

The regulations define the term "animals" as applying to those kinds which are subject to inspection only or to inspection and quarantine, as the case may be, referring particularly to horses, asses, mules, cattle, sheep, other ruminants, swine, and collie, shepherd, or sheep dogs; but the regulations also provide that any domestic or other kind of animals which may be offered for importation may be included under the inspection and quarantine requirements when so ordered by the Chief of the Bureau of Animal Industry.

PERMITS AND OTHER SAFEGUARDS.

An important feature of these regulations in preventing the importation of the infection of animal diseases from foreign countries consists in the requirements relative to the obtaining of two permits. The permits required by the regulations for cattle, sheep, and other ruminants and swine must be procured from the Secretary of Agriculture by prospective importers before shipment. These are issued in triplicate, two copies being sent to the owner or his agent, one of these being addressed to the United States consul at the foreign port of shipment and the other to the collector of customs at the United States port of entry. The former is for presentation to the consul at the port of shipment, in order to entitle the animals to clearance; the latter is to accompany the stock for presentation to the collector of the port along with the other papers to cover their entry. The third copy is forwarded by the bureau, directly at the time of issuing, to the superintendent or veterinary inspector in charge of the quarantine station.

Any ruminants or swine arriving at a port of the United States, for which permits as above have not been procured by the owner or his agent, are denied entry, and such animals are not permitted to land, but remain on the ship and depart upon her leaving the United States.

Other safeguards of the regulations governing the importation of horses, cattle, sheep, and other ruminants and swine are found in the



FIG. 1.—YOUNG BULL FOR IMPORTATION, IN STALL ON INCOMING OCEAN STEAMER.



FIG. 2.—TRANSFERRING IMPORTED CATTLE FROM STEAMER DOCK TO LIGHTER AT NEW YORK.

The animals are taken from the dock to cars on the lighter, on which they are transferred to Jersey City, and then shipped by rail to the quarantine station at Athenia.



FIG. 1.—INSPECTING HORSES FOR IMPORTATION ON OCEAN STEAMER.

The inspectors go aboard the steamer on its arrival and examine the horses before they are unloaded.



FIG. 2.—TRANSFERRING IMPORTED HORSES FROM STEAMER DOCK TO LIGHTER AT NEW YORK.

Horses after passing inspection are admitted without quarantine.



THE QUARANTINE STATION FOR IMPORTED ANIMALS AT ATHENIA, N. J.



FIG. 1.—UNLOADING IMPORTED CATTLE AT THE QUARANTINE STATION AT ATHENIA, N. J.



FIG. 2.—STABLES AT THE ATHENIA QUARANTINE STATION.

requirements for certificates and affidavits from the owner and from the proper authority at the place of origin, showing that such animals have been continuously located in the district for six months preceding; that no contagious disease (tuberculosis and actinomycosis excepted) has existed in the district for one year; and that the animals have not passed through any infected region or been exposed on the way to any infectious or contagious disease affecting that kind of animals.

All ruminants and swine are subject to careful veterinary inspection, and those from countries outside of North America are also subject to quarantine. Cattle are required in addition to pass a satisfactory tuberculin test by a bureau inspector stationed in Great Britain, prior to shipment, or in quarantine after arrival. Horses are admitted on inspection without quarantine. All dogs are subject to inspection at the port of entry. Collie, shepherd, or sheep dogs are subject to quarantine.

No litter, fodder, or other aliment, nor any ropes, straps, chains, girths, blankets, poles, buckets, or other things used for or about the animals, and no manure, can be landed from any vessel except under such regulations as may in each case be prescribed. Provision is likewise made for the proper disinfection of vessels and cars which carry animals and of the space which was occupied by them at the quarantine station following their release.

As the granting of permits depends upon sanitary conditions abroad and upon conditions and facilities for caring for animals at the quarantine stations, and as these conditions vary from time to time, intending importers should apply to the bureau for latest information.

QUARANTINE PERIOD.

The quarantine period required for cattle from Great Britain, Ireland, and the Channel Islands is 30 days, counting from the date of arrival at the quarantine station; and for sheep and other ruminants and swine it is 15 days. After the expiration of the prescribed quarantine period, if the animals are found free from disease they are released.

The requirements regarding the quarantine of cattle, sheep, other ruminants, and swine from countries of North America, especially Canada and Mexico, vary according to circumstances. When quarantine is required the period is one week or longer. For details the reader is referred to the regulations.

The regulations provide for the inspection of dogs. Collie, shepherd, or sheep dogs are also subject to quarantine not to exceed two weeks or until it can be determined by proper examination whether

or not they are the host of the *Tænia cœnurus*, the tapeworm of the dog, which, through the feces of infected dogs, when dropped upon pastures and being devoured by sheep develop into the gid parasite, *Cœnurus cerebralis* (*Multiceps multiceps*), causing the gid disease in sheep.

Horses, asses, mules, sheep, goats, and swine from Asia and Africa are prohibited importation into the United States by Bureau of Animal Industry Order 174, on account of the presence of trypanosomes in those parts of the world. Cattle are not included in this order, as their importation is already prohibited by section 12 of the tariff act, reference to which has already been made.

Certain menagerie animals also come within the scope of the regulations and are inspected and quarantined as conditions require.

DISEASES IN FOREIGN COUNTRIES AND THEIR EFFECT ON IMPORTS.

Quite a number of foreign countries, particularly those of Europe, maintain sanitary supervision of their live stock and issue periodical reports showing the status of contagious diseases of domestic animals. The reports for the past year show an unprecedented prevalence of disease, especially foot-and-mouth disease, on the Continent of Europe, and this condition has kept the bureau constantly on the alert to prevent the introduction of contagion.

For a period of more than two years prior to November, 1906, the department had permitted the importation of cattle from Belgium and the Netherlands, but about that time foot-and-mouth disease was introduced into Belgium in some French sheep, with the result that before the end of the following month the disease had extended to every Province in Belgium and over the border into the Netherlands. Although the latter country was able to hold the disease in check for a while, control was apparently lost a few months later, and the disease has continued to prevail there, the reports for 1911 showing the most serious condition of any of the preceding five years.

In view of the great prevalence of foot-and-mouth disease in Germany and other countries of continental Europe, and the commercial and contiguous territorial relations existing between the countries of Europe, together with the laxity of methods in combating this disease in some of the continental countries, the conditions have become a very serious economic problem. Even Great Britain, with her stringent sanitary police measures, has suffered repeated outbreaks of the disease during the past year without being able, in a single instance, to determine the source of the contagion. As a consequence of these conditions the United States was obliged to discontinue the issuance of permits for the importation of rumi-

nants and swine from Great Britain as well as from Belgium and the Netherlands.

The first visitation of foot-and-mouth disease in Great Britain in 1911 occurred about March 9. Our own ports, which had been promptly closed against live stock from Great Britain on receipt by this Government of a report of this outbreak, followed by the canceling of all outstanding permits, were again opened on June 15. On July 5, however, another outbreak was reported, and further outbreaks followed from time to time throughout the remainder of the year, despite the vigorous work of the British Board of Agriculture in promptly slaughtering diseased and exposed cattle, sheep, and swine, and thoroughly disinfecting the infected premises. The disease has since continued to appear in various parts of the country.

During the period from July 5 a large number of importers had been waiting to import cattle, several of them having already purchased animals; and while the department was in full sympathy with them and their interests, it was deemed inadvisable to permit any importations from Great Britain because of the successive outbreaks, and especially the absolute inability of the British Board of Agriculture to determine the sources or means by which the disease was being brought into England or to formulate any plan that was likely to enable them to exclude it. Under such conditions it was impossible to tell where or when it would next appear. The resumption of imports will depend upon the success of the efforts at stamping out the disease in the affected countries. So far the Channel Islands have been successfully protected against the contagion.

SOME EXAMPLES OF THE SUPPRESSION AND EXCLUSION OF CONTAGIOUS DISEASES FROM ABROAD.

The methods in practice in our international quarantine and sanitary service since the establishment of the Bureau of Animal Industry in 1884 have thus far presented an effectual barrier to the entrance of various contagious diseases from other parts of the world.

Since the eradication of contagious pleuropneumonia, foot-and-mouth disease has probably given this country more concern than any other of the contagious diseases of the Old World which it has been the office and duty of the bureau to guard against. Although this disease has occurred in the United States on five different occasions, namely, in 1870, 1880, 1884, 1902, and 1908, it was promptly eradicated in each instance, and in the case of each of the outbreaks occurring since the organization of the bureau it has been shown that the contagion was not introduced into this country through the importation of live stock or through any of the other channels of entrance over which the bureau has had supervision. The origin

of the outbreaks of 1902 and 1908 was definitely traced to imported vaccine virus used on calves in the propagation of virus for use in vaccinating against smallpox.¹

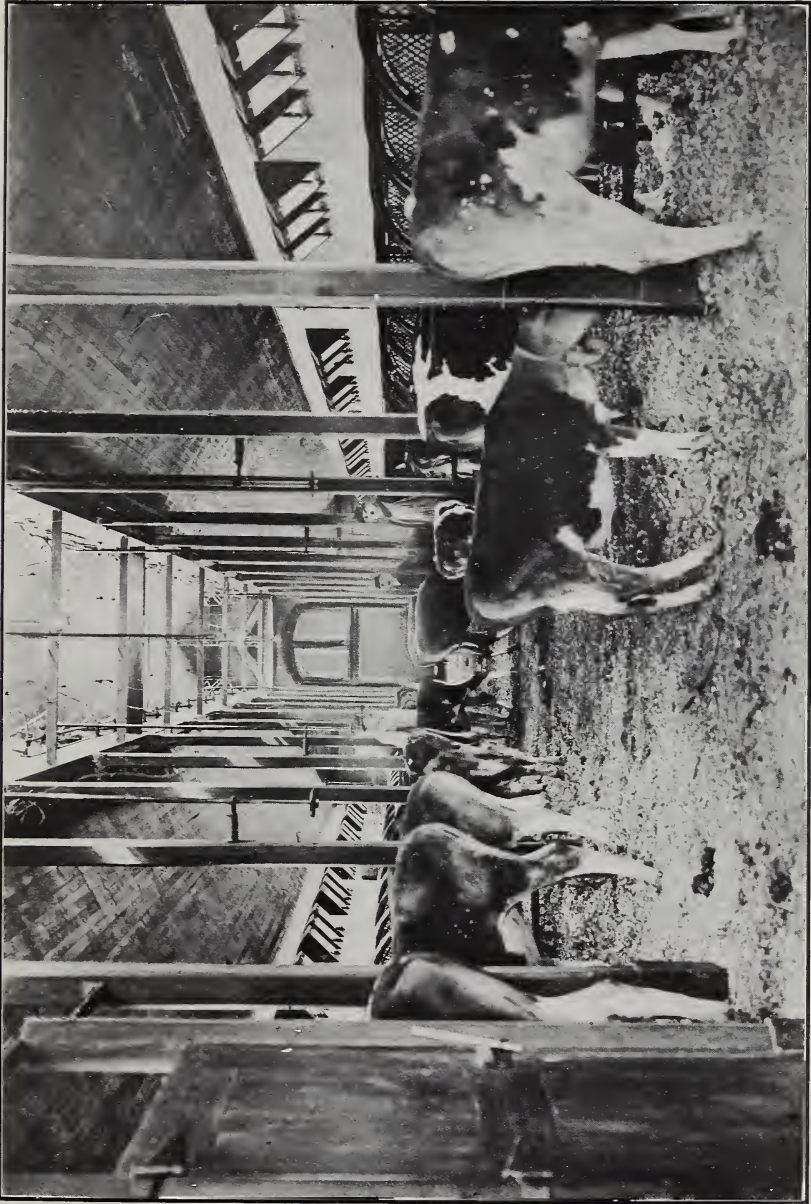
When the United States came into possession of the Philippine Islands the Bureau of Animal Industry took up the study of some of the tropical diseases of live stock because of the new danger with which we then seemed to be menaced by returning soldiers, officers, and others desiring to bring animals to the United States from that archipelago. An order was issued by the Secretary of Agriculture, effective December 13, 1901, prohibiting the landing of animals from the Philippine Islands at any of the ports of the United States or its dependencies, as it was soon recognized that almost all of the serious communicable diseases of live stock were to be found there in more or less abundance. And owing to the fact of the United States having a climate, somewhere in its vast area, that would seem adapted to the propagation of almost any kind of an animal disease should it once gain a foothold in this country, it was deemed necessary to control or cut off every possible recognized avenue through which the infection of animal diseases from the Philippines might be introduced, particularly surra and rinderpest.

In addition to the successful exclusion of contagious diseases from the United States, two concrete examples will be given to illustrate the efficient work of the international quarantine service in preventing the escape of infection from quarantine and damage to our live-stock industry, even when through their subtle nature certain contagious diseases have reached our shores.

Surra was found in an importation of zebu cattle shipped from Bombay, India, April 27, 1906, but it was not allowed to escape from the quarantine. This occurrence not only served the purpose of an additional test of the efficiency of our international quarantine service, but at the same time gave the bureau actual experience with this disease, which from time to time has wrought such havoc among stock, especially horses, in oriental countries.

It appears that over 30 years ago Mr. A. H. Pierce introduced into southern Texas a number of the so-called Brahman cattle from India which were successfully crossed on the native cattle, with the result that their progeny were relatively free from ticks, while the native stock in the same pasture would be literally covered with these pests. As a consequence the Brahman grades thrived under the same conditions which served to deplete the native stock. They not only withstood the semitropical weather conditions of the Gulf coast section, but their thin, tough skin, very short hair, and the seeming repugnance of their sebaceous secretion to insect life, rendered them im-

¹ Particulars are given in Bureau of Animal Industry Circular 147.



CATTLE IN STABLE AT ATHENA QUARANTINE STATION.



UNLOADING AN IMPORTATION OF KERRY CATTLE AT BALTIMORE.

The upper picture shows the unloading from the steamer to the dock, and the lower picture from the dock to the lighter for transfer to the quarantine station at Turner, Md. (These cattle were imported by the late Clarence Moore.)



FIG. 1.—TRANSFERRING AN IMPORTATION OF AYRSHIRE CATTLE FROM DOCK TO LIGHTER AT BALTIMORE.



FIG. 2.—UNLOADING THE CATTLE FROM LIGHTER AT QUARANTINE STATION, TURNER, MD.

immune to heavy tick infestation, while at the same time they were immune to Texas fever, their natural habitat being a tick-fever country.

Mr. A. P. Borden, executor of the Pierce estate, was very desirous of making a fresh importation under any necessary precautions prescribed by the department. As he agreed to comply with all of the requirements and to defray the expenses, it was finally arranged to send a veterinary inspector of the bureau, Dr. William Thompson, who had served two years in the veterinary service in the Philippine Islands, to inspect the animals before purchase, inquire into their history, supervise their transfer to the seaboard, and accompany them to the United States, under which conditions a permit was finally granted for their importation.

Dr. Thompson and Mr. Borden met at Bombay, India, on March 31, 1906, and they proceeded together in the selection and purchase of the cattle. Purchases were made in sections reported to be free from rinderpest, surra, contagious pleuropneumonia, foot-and-mouth disease, and all other contagious diseases of cattle, until there were secured in all 46 bulls, 2 cows, 1 heifer, and 2 calves, representing 7 different breeds. The animals were shipped to the agricultural farm at Poona, where microscopic examinations of their blood were made on two different occasions, and as a precautionary measure they were inoculated with antirinderpest serum to guard against any possible exposure during loading or detention at Bombay. They were then transported in cleaned and disinfected cars to Bombay for shipment by steamer. Blood tests were to have been made by rabbit inoculations, but unfortunately it was impossible to obtain the rabbits for this purpose at Bombay. The cattle were shipped from Bombay April 27 for Hamburg, where they were transhipped June 2, and arrived at New York June 16. They were then transferred to a special place of quarantine on Simonsons Island, about 16 miles down the bay, an isolated spot adjoining Staten Island.

In addition to the blood examination at Poona, two subsequent microscopical examinations of the blood of the animals were made during the ocean voyage, but the presence of the surra trypanosome was not detected, and the cattle all arrived in New York Harbor in apparently sound health. Notwithstanding this, however, it was deemed advisable upon their arrival at quarantine to make blood inoculations, which was done under the direction of Dr. John R. Mohler, chief of the Pathological Division of this bureau.¹ It was found as a result of inoculations of the blood from the 49 adult cattle that 3 were infected. The seriousness of the situation, upon finding surra infection in the herd, will be apparent, as the zebus were tied

¹Further particulars are given in a paper by Drs. Mohler and Thompson in the Twenty-sixth Annual Report of the Bureau of Animal Industry for 1909, p. 81.

on two sides of an open corral, 100 feet square, with no protection from the various kinds of biting flies which were present in great numbers, including the big black horsefly, or breeze fly, *Tabanus atratus*, which Dr. Mohler believes to be responsible for spreading the infection to other animals.

On discovery of surra in the herd an attempt was made to protect the animals from flies by putting up an L-shaped frame with a cotton netting covering, completely closing in the two sides of the corral. It was subsequently deemed necessary, however, in order to ascertain absolutely and to limit the extent of the infection, to put up a frame building with box stalls, so that each animal could be screened off separately. Therefore Mr. Borden erected such a building, with the result that, after the last seven series of tests were successively negatives and a killing frost had occurred, the remaining 33 animals were released from their five-months' quarantine on November 14 and shipped to their destination in Texas, 18 out of the original herd having been destroyed because of surra infection.

Brief reference will also be made to an importation by this bureau in 1905 of 65 head (4 males and 61 females) of milch goats from the island of Malta, a full history of which is published in the Twenty-fifth Annual Report of the bureau. The investigations conducted by Dr. Mohler in connection with these goats led to the discovery, in the milk and urine of a number of them, of the *Micrococcus melitensis*, the causative agent of Malta fever, and to the conclusion that this organism lives a more or less passive existence in the body of the goat, exercising its pathogenic effects when it gains entrance to the human body. It was finally found necessary to destroy all of this importation, including the kids, a number of which proved to be infected.

Thus these and other infectious and contagious diseases of the Old World are excluded and combated through the work of the respective and correlated agencies of the Bureau of Animal Industry.

There are some diseases which, because of their common existence, cause more annoyance in quarantine than others. Among these are necrobacillosis, foot rot in sheep, and infectious diarrhea of young calves. These diseases do not become manifest until the animals are on shipboard or after arrival at the quarantine station. In the handling of other animals, such as may be classed as menagerie ruminants and swine, special precautionary measures such as blood tests and rabbit inoculations are used to prevent the introduction of the infection of surra (*Trypanosoma evansi*) and other trypanosomes.

SUPERVISION OF THE IMPORTATION OF HIDES.

The proper and satisfactory handling of the work in connection with the importation of hides constitutes one of the most difficult

problems with which our sanitary service has to deal, as there is great danger of introducing infection in this way unless proper precautions are observed. The importation of hides is subject to the same law that governs the importation of cattle, and the regulations are issued by the Secretary of the Treasury on the recommendation of the Secretary of Agriculture. The regulations now in effect (Treasury Department Circular 23, Division of Customs, May 2, 1910) provide for the disinfection of hides by three different methods, as follows:¹

1. By immersion in a 1 to 1,000 solution of bichlorid of mercury.
2. By immersion in a 5 per cent solution of carbolic acid.
3. By exposure (suspended separately in a tight room) to sulphur dioxide.

Exceptions are made in the disinfection requirements in the case of—

1. Hides the product of, and imported from, any part of North America.
2. Hard, sun-dried hides, also old and worn-out articles of manufacture made from raw hides, such as loom pickers and mallet heads, imported as glue stock.
3. Hides and hide cuttings and parings or glue stock which have been lime dried after soaking for 40 days in a strong lime wash made by slaking quicklime in water and containing sufficient lime to be of a creamy consistency.
4. Abattoir hides, the product of Sweden, Norway, New Zealand, Australia, or Great Britain, when accompanied by a certificate of an official veterinarian showing that the same were taken from cattle free from disease at the time of their slaughter.
5. Hides taken from American cattle killed in lairages in Great Britain.

In the case of all hides offered for shipment from districts of any country in which anthrax is prevalent, disinfection exclusively by immersion for at least 30 minutes in a 1 to 1,000 solution of bichlorid of mercury is required, and certificates of disinfection, by the American consular officer of the district from which the hides are shipped, are required; otherwise the hides are treated as prohibited importations and denied entry. The disinfection of hides on the dock upon arrival of the importing vessel in this country, or their entry for transportation to another country across American territory, is not permitted, for the reason that the landing of diseased hides would tend to the dissemination of cattle diseases. It will be observed that when vessels arrive from foreign countries with hides

¹ The regulations have since been amended so as to allow, in lieu of the immersion of the hides in the disinfecting solution, the wrapping of the bundles or bales of hides in suitably strong and lightly woven bagging which has immediately prior to such use been thoroughly soaked in one of the disinfecting solutions mentioned.

on board which do not belong to the excepted classes, and are unaccompanied by proper consular certification, there is no alternative but for the inspector to see that such hides remain on the vessel and depart with it at the time of next sailing, which, of course, is not agreeable to either the consignor or the consignee.

As the hide output of the big slaughterers and packers in the United States is now to a great extent tanned in their own establishments, the owners of exclusively tanning establishments state that they are absolutely dependent upon foreign importations to keep their tanneries in operation, and that in consequence of the common prevalence of anthrax in some portions of the hide-exporting countries, and the strict enforcement of our sanitary regulations, they are utterly unable at times to procure the necessary stock. A very considerable amount of attention and investigation has been directed to the matter of discovering a practicable method of anthrax sterilization as affecting hides, skins, hair, and wool, without yet having reached a satisfactory solution of this intricate problem. It is claimed by the tanners that the requirements of our sanitary regulations are equivalent to prohibition, since by the immersion of either green-salted or sun-dried hides for 30 minutes in a 1 to 1,000 solution of bichlorid of mercury they are seriously injured for the manufacture of leather. Experiments of the bureau indicate that such is the case, particularly as applying to the hard-dried hides, which the British reports show to be the source of anthrax infection among the handlers and workers much more frequently than green or pickled hides and skins.

Arrangements have been made during the past year, through the State Department and its Consular Service, for the prompt transmission of information by the Bureau of Animal Industry to the tanning and leather associations of the United States regarding the prevalence of anthrax in a consular district abroad, in order that the trade may in turn notify foreign buyers and stop purchases. But to meet satisfactorily the requirements of the situation something more than this is needed. In all tropical and semitropical countries, such as India, China, Africa, and South America, skins are dried either in the sun or in a shaded air current, or are plastered over with an earth salt while drying. The restoration of all such hides to the green, raw, or wet state has always been a source of difficulty and loss to the tanner.

The Bureau of Animal Industry has been making investigations of means for the sterilization of anthrax spores or germs in hides, skins, hair, wool, and other suspected carriers, as in view of the quantities of anthrax-bearing materials which are offered for export from foreign countries it is exceedingly desirable that some practicable process for general adoption may soon be evolved by which



STABLES AT THE QUARANTINE STATION FOR IMPORTED ANIMALS AT TURNER, MD.



FIG. 1.—INSPECTION OF EXPORT CATTLE AT UNION STOCK YARDS, CHICAGO.



FIG. 2.—EXPORT CATTLE GOING FROM STOCK YARDS TO LIGHTER AT JERSEY CITY.



FIG. 1.—LIGHTER CARRYING EXPORT CATTLE FROM JERSEY CITY TO STEAMER DOCK IN NEW YORK HARBOR.



FIG. 2.—LOADING EXPORT CATTLE FROM LIGHTER TO OCEAN STEAMER.



FIG. 1.—EXPORT CATTLE IN PENS ON OCEAN STEAMER.



FIG. 2.—STEAMER SAILING FROM NEW YORK CARRYING EXPORT ANIMALS.

these important articles of commerce can be effectively disinfected without injury or depreciation of their value.

QUARANTINE STATIONS.

The Government owns and maintains three quarantine stations for animals imported through the ports of Boston, New York, and Baltimore.

The quarantine station for the port of New York is located at Athenia, N. J., on the Newark branch of the Erie Railroad, 16 miles from New York. The stock-loading chute and yard of the Lackawanna Railroad is not more than a quarter of a mile from the quarantine station, making this road also available for outgoing stock after having been released from quarantine. The station comprises 51 acres of ground and has 23 stables, each of which is inclosed with heavy woven-wire fencing, allowing a fair-sized yard or corral for the stock to enjoy the open air and sunshine in good weather. The stables, most of which are modern brick structures, have a capacity of about 600 cattle.

This station, equipped with complete water and electric-lighting systems, and with three dwellings occupied respectively by the superintendent and two station hands and their families, and three little cottages or quarters for the use of attendants of animals in quarantine, is generally regarded as the most complete and attractive animal quarantine station in the world.

Ruminants and swine arriving at the port of New York, all of which are subject to quarantine, are, after passing a satisfactory inspection by an inspector of the Bureau of Animal Industry, unloaded from the steamer into cleaned and disinfected cars, on a lighter, or into a covered barge which has been similarly treated, and towed to Jersey City, where they are transferred to cleaned and disinfected cars and conveyed to the quarantine station. The station has an unloading platform of earth with a concrete retaining wall of sufficient length to permit of the prompt unloading of trains of considerable length.

The quarantine station for the port of Baltimore is located on the water front within the lighterage area, at Turner, Md., about 5 miles from the steamer docks. The grounds contain 17 acres, recently purchased by the Government; hence all of the buildings, consisting of eight stables, a superintendent's dwelling, and two stock attendants' cottages, are all new. The stables have a concrete base, floors, and side walls, with frame superstructure. They are inclosed by strong woven-wire fencing, forming generous-sized yards, and are equipped with hydrants supplied with water from a deep-driven well and a pressure tank of ample proportions. The capacity of this station is

about 280 cattle. There is room on the grounds for seven more stables, so that the cattle capacity can be increased to approximately 500 head.

Animals are unloaded from the steamers into a cleaned and disinfected covered barge, and conveyed directly to the quarantine wharf, which is on the property, this station having a beautifully shaded water front of 300 feet. Its opposite frontage is on the Baltimore & Sparrows Point Railroad, with ample docks or platform facilities for shipping the animals out by rail over the Pennsylvania Railroad after their release from quarantine. Animals can be lightered back to Baltimore and shipped over the Baltimore & Ohio Railroad. A trolley road from Baltimore parallels the steam road. The station is 20 minutes' ride from Baltimore (Union Station), and about 40 minutes' ride from the business center of Baltimore by trolley over the Sparrows Point & Bay Shore line.

The quarantine station for the port of Boston is located at Littleton, Mass, on a beautifully wooded tract of 31 acres bordered by a small lake. It has eight stables, six of which have recently been remodeled, concrete floors and bases replacing the wood of the old stables. Several of the stables are fitted with side doors, so that they, with their ample yards and shade, are favorable and readily adapted for the accommodation of three or four different lots of sheep each, and as a consequence Boston has become a popular port of entry for sheep importers.

All three stations have water systems with hydrants in all of the stables and yards. The department furnishes free stable accommodations and water supply. Transportation charges, feed, and attendants are at the expense of the owner or importer.

THE INSPECTION OF LIVE STOCK FOR EXPORT.

Animals intended for export are given a veterinary inspection by the Bureau of Animal Industry in order to guard against the exportation of any that may be affected with disease and to conform to the requirements of certain foreign governments. This inspection thus serves to maintain a good reputation for American live stock in foreign markets and to keep open markets that would otherwise be closed against us. Our largest exports of cattle are to Great Britain. Considerable numbers of cattle, sheep, horses, and mules are also inspected for export to Canada, and in conformity with the Canadian regulations the cattle are tested with tuberculin for the detection of tuberculosis and equine animals with mallein for the detection of glanders. During the past five years the bureau has made over two and a half million inspections of animals for export. This number includes duplicate inspections of many animals inspected first at interior points, such as Chicago and Buffalo, and again at the ports of

export, such as New York and Boston. The actual number of animals inspected was over a million and three-quarters. In this number there were nearly 300,000 Canadian animals shipped through the United States in transit to other countries, mainly Great Britain. The tuberculin test was applied to over 2,200 cattle and the mallein test to about 34,000 horses and mules. Our exports of meat animals have decreased in recent years because of the heavy demand and high prices of the home market. The United States exports comparatively few live animals to Continental Europe, mainly because our stock is excluded by the policy of some of the European governments.

Besides inspecting live stock for export, the bureau inspects the ocean vessels that carry such animals, and enforces regulations as to fittings, feed, water, attendants, etc., so as to insure that the animals will be carried in a safe and humane manner and reach the other side in good condition. In the five years mentioned 2,733 inspections of vessels were thus made. On arrival at the principal British ports the animals are again inspected by representatives of the Bureau of Animal Industry stationed there, as well as by the British authorities. Statistics show that the losses of live stock in ocean transit, which were formerly quite heavy, have been reduced to a negligible point under the bureau's supervision, and insurance rates have been correspondingly decreased.

The regulations governing the exportation of live stock are issued by the Secretary of Agriculture under authority of the act of Congress approved August 30, 1890, already mentioned, the act of March 3, 1891, entitled "An act to provide for the safe transport and humane treatment of export cattle from the United States to foreign countries, and for other purposes," and the acts approved March 22, 1898, and June 30, 1906, making appropriations for the Department of Agriculture. The regulations now in force are designated as Bureau of Animal Industry Order 139.

The regulations provide that no cattle, sheep, swine, or goats shall be exported from the United States to any foreign country unless and until the same have been inspected and found free from disease or exposure thereto by an inspector of the Bureau of Animal Industry, and that unless the Secretary of Agriculture shall have waived the requirement of a certificate of inspection for the particular country to which such animals are to be exported, no clearance shall be issued to any vessel carrying such animals unless and until a certificate of inspection showing freedom from disease or exposure thereto shall have been issued by the Department of Agriculture. The requirement of a certificate for shipments of such animals to Cuba, the West Indies, Mexico, Central America, and the countries of South America, excepting Argentina and Uruguay,

is waived by the Secretary's order. The places of inspection are designated as follows: Chicago, Ill.; Kansas City, Mo.; Omaha, Nebr.; South St. Joseph, Mo.; National Stock Yards, Ill.; Indianapolis, Ind.; Buffalo, N. Y.; and Pittsburgh, Pa., as well as the following ports of export: Portland, Me.; Boston, Mass.; New York, N. Y.; Philadelphia, Pa.; Baltimore, Md.; Norfolk, and Newport News, Va.; Port Royal, S. C.; New Orleans, La.; and Galveston, Tex. Notice follows to the effect that all animals will be inspected at ports of export, regardless of the fact that they may or may not have been inspected at the above-named interior stock yards.

The regulations also provide for the inspection of horses and the issuance of certificates therefor whenever required by the country to which the horses are to be exported.

Export cattle are tagged at central stockyards for identification, at which time records are made as nearly as possible of their points of origin in order that in the event of outbreaks of disease the cattle may be traced back to the locality from which they were shipped.

Railroad companies and proprietors of stockyards and stables located at the ports of export are required to keep separate, clean, and disinfected stockyards and pens or stables for the use of export animals. Shippers are obliged to notify the inspectors in charge of the various yards of intended shipments of animals, together with the numbers and designations of cars in which they are to be shipped. The inspector, after passing such animals, must notify the inspector in charge at the port of export and inspectors located at intermediate cities where the animals may be unloaded for feeding and watering.

In the transportation of export animals from yards to steamers they are not permitted to pass unnecessarily over any highway or to be removed to cars or boats which are used for conveying other animals. Boats transporting export animals to the ocean steamers must first be cleaned and disinfected under the supervision of the inspector of the port, and the ocean steamer before receiving such animals must likewise be thoroughly cleaned and disinfected under the direction of the port inspector. When passage upon or across the public highway is unavoidable in the transportation of animals from the cars to the boats, it must be under such supervision and restrictions as the inspector may direct.

The space on vessels is definitely prescribed for the different kinds of animals, and they must be so placed on the vessel as not to interfere with its proper management or with the efficient working of the necessary lifeboats or with the ventilation. The number of animals and the different kinds which may occupy a single pen is limited, and the sizes of the pens for the different kinds of animals are designated.

The specifications for vessel fittings to carry live stock include stanchions of wood and of iron, headboards, footboards, rump boards, hook bolts or clamps, beams, braces, head pipes, division boards, division pipes, flooring, foot locks outside planking, shelter-deck planking, cattle fittings over spar deck, under-deck fittings, troughs, pens at ends of hatches, protection from heat of boilers, casing for steering gear, ventilation, carrying of stock on hatches, width of alleyways, dimensions of lumber and other materials, lighting, feed and water, the number and character of attendants to be employed, rest before loading on steamers, and loading, certificates of inspection, head ropes, etc., as well as the disposition of animals that are injured in transit, and the kinds of fittings that shall be used for each of the various kinds of animals and decks upon which live stock may be carried.

In addition to the regulations of this Government, whose purpose is to insure the healthfulness and desirability of American live stock to the people of importing countries, the more progressive of the latter have their own sanitary and quarantine regulations. Information concerning these foreign regulations can usually be obtained by prospective exporters by applying to the consular representatives of such countries at the United States seaboard ports of export. The names of these consular representatives can be ascertained by reference to a late edition of the United States Congressional Directory (which may usually be found in public libraries) or by writing to the Chief of the Bureau of Animal Industry, Washington, D. C.

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