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THE 1929 OUTBREAK OF FOOT-AND-MOUTH DISEASE IN SOUTHERN CALIFORNIA

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DISCOVERY AND DIAGNOSIS OF THE DISEASE

As on the eight previous occasions of record when foot-and-mouth disease appeared in the United States, the outbreak of 1929 aroused concern for the safety of livestock throughout the country. So highly infectious is this foreign malady that prompt and drastic eradication measures are necessary to prevent its rapid spread, with resulting heavy losses to agriculture and industry.

The first indication of the 1929 outbreak was a condition observed by Frank B. Haas, owner of a large hog ranch near Montebello, about 4 miles northwest of Whittier, in Los Angeles County, Calif. There were 3,271 hogs on this ranch and their feed was garbage obtained from San Pedro, the seaport for Los Angeles. On January 10, 1929, Mr. Haas noticed several lame animals in a pen of fat hogs. Since lameness from sharp pieces of bone, glass, tacks, phonograph needles, and other sharp articles is very common among garbage-fed hogs, the owner attached no significance to the hogs' lameness at that time. On the following day he noticed about six lame hogs, but again thought little of it. Two days later he observed a considerable increase in the number of lame animals.

He then recalled that L. F. Conti, a member of the Los Angeles County livestock inspection force, who was assigned to hog-ranch inspection, had requested all garbage feeders to report promptly to

him cases of lameness not explainable by injury from sharp objects. Accordingly, Mr. Haas notified Doctor Conti's office by telephone January 14, requesting an investigation. At 1.15 p. m. of the same day Doctor Conti arrived at the ranch, and on driving up to the pens of fat hogs noticed several of them squealing as they moved from the fence line. On close examination he observed vesicles (blisters) in the cleft of the hoof of a fat hog. Another hog showed the same type of vesicles and also some broken tissue around the coronet.

EARLY PRECAUTIONARY MEASURES

Suspecting foot-and-mouth disease, Doctor Conti instructed Mr. Haas to keep all truck drivers on their trucks, to allow no one to walk through the alleys, and to allow no trucks to leave until further notice. Doctor Conti then notified L. M. Hurt, chief county livestock inspector, who came to the ranch the same day. The first seven hogs examined, all of which were sick, showed temperatures ranging from 103° to 105.4° F. The third one of the animals showed unbroken vesicles at the base and tip of the tongue. About 71 fat hogs were observed to be off the feed floors and were lame. Because of the grave indications of foot-and-mouth disease, Doctor Hurt immediately quarantined all the trucks and employees on the ranch. The main alley was disinfected with a cresol dip, so that all trucks would go over disinfected ground. Trucks which had been unloaded were thoroughly washed and then sprayed thoroughly with a disinfecting solution. The drivers were required to disinfect their hands and shoes before leaving.

INOCULATION TESTS BEGUN

On the opposite side of the alley other pens of hogs which had been fed from the same truck were inspected, but none were found to show an abnormal condition. To establish the identity of the disease, Doctors Hurt and Conti began inoculation tests. That evening they inoculated a horse with material taken from vesicles of a sick hog. Horses are considered practically immune to foot-and-mouth disease, but are susceptible to vesicular stomatitis, a disease that causes somewhat similar symptoms. That evening Doctor Hurt informed Rudolph Snyder, inspector in charge of Federal veterinary field activities in California. Jacob Traum, of the University of California; G. H. Hecke, director of agriculture; J. P. Iverson, State veterinarian; and other officials when learning of the outbreak went to the affected region as soon as possible and participated in plans for eradication.

On January 15 Doctor Conti again examined the garbage-fed hogs and noted that in the affected pens 149 were sick or lame out of approximately 350 head. Shortly after Doctor Hurt's arrival, further inoculation tests were made on 2 pigs and 2 calves. When Doctor Traum arrived in the afternoon of January 16, he inoculated 2 more pigs and also 4 guinea pigs. While awaiting the results of the inoculation tests the veterinarians considered the possible means by which the disease had been brought to the ranch and also all means by which infection might have been carried from the ranch

before quarantine was established. They learned that the affected hogs had been fed garbage obtained from the seaport of San Pedro. In view of the freedom of the United States from foot-and-mouth disease ever since the eradication of the California and Texas outbreaks, in 1924 and 1925, circumstances indicated that the new infection undoubtedly had come from garbage unloaded by a ship at San Pedro.

Accordingly, Doctor Hurt ordered an inspector to visit another hog ranch which likewise had been feeding garbage from the same harbor. Inquiry also revealed that a dead-hog collector had visited the Haas ranch January 13 and had removed a hog from one of the pens where lameness was noticed. Arrangements were made at once to trace the movements of the hauler from that time on. All other collectors of dead stock were immediately stopped from going to hog ranches and all manure hauling was likewise stopped. As a further safeguard the only entrance gate to the Haas ranch was securely locked.

The foregoing description of events is given in considerable detail, since experience in combating foot-and-mouth disease shows that prompt action to stop the spread of the infection is absolutely necessary to prevent extensive losses and heavy expense in eradicating the malady.

POSITIVE DIAGNOSIS MADE JANUARY 17

On January 16, while inoculation tests were in progress, Doctor Snyder arrived at the ranch, and after observing the hogs and test animals, sent the Bureau of Animal Industry, United States Department of Agriculture, Washington, D. C., a night letter stating that he believed the malady was foot-and-mouth disease. A telegram from him the following day reported a positive diagnosis. On the recommendation of the chief of the bureau, the Secretary of Agriculture declared that an extraordinary emergency existed. This action enabled the department to proceed at once with the appraisal, slaughter, and burial of the affected herd. The work of eradication thus begun was conducted in cooperation with the department of agriculture of California and local organizations.

By telegraphic orders the United States Department of Agriculture directed about 50 veterinary inspectors and employees, largely from near-by States, to aid State and local forces in suppressing the outbreak. These men were selected because of former experience in such work or because of special qualifications. The department likewise notified veterinary officials in all States and in Canada and Mexico concerning the outbreak, so that appropriate safeguards might be established. Other countries were notified by the Department of State. The Federal Department of Agriculture also issued a quarantine order, effective January 19, placing in close quarantine the area within a 3-mile radius of Rivera, which was near the affected premises. The quarantine prohibited or restricted the movement, from the designated area, of livestock or commodities likely to carry the disease. The State of California likewise promptly issued supplemental quarantine regulations.

FIRST HERD SLAUGHTERED AND BURIED JANUARY 19

On the same day, January 19, the affected or exposed hogs were slaughtered and buried. Under veterinary direction a crew of 40 laborers was assigned the work of cleaning and disinfecting the premises, consisting of approximately 10 acres of pens and feed lots. For this purpose a large power sprayer equipped with two lines of hose was used. Another sprayer with four lines of hose had meanwhile been brought from Sacramento by the State department of agriculture and held in reserve for use on other premises should there be a spread of the infection.

After completing the slaughter of hogs on the Haas ranch, appraisers from the Bureau of Animal Industry and the State department of agriculture were instructed to purchase 14 hogs and 1 cow from a near-by ranch; 8 heifers and 1 bull from another man, who had them in the pasture adjoining the hog ranch; and to purchase all the goats, 1 cow, 1 heifer, and a few pigs in a near-by Mexican village. This latter action was made necessary by the fact that the people in the village had large numbers of dogs, some of which undoubtedly had been around the infected hogpens and were therefore likely to carry the infection to livestock of the village. As a further precaution, the dogs on the infected ranch and a number of those in the vicinity were killed and buried.

SOURCE OF INFECTION INVESTIGATED

A study of the source of infection showed that the garbage which caused the outbreak came from the steamship *City of Los Angeles*, which was a merchantman; rumors that a naval vessel discharged the infected garbage were found to be entirely groundless. The steamship *City of Los Angeles* had left San Pedro in October, 1928, for a South American cruise. On November 2 the boat put in at Buenos Aires, where it remained until November 6. During this period it received provisions, taking on, among other articles, about 18,000 pounds of meat, which included beef, pork, lamb, and veal. The vessel docked December 9 at its home port, Wilmington, Calif., in San Pedro Bay. On December 20 the remaining meats, amounting to several thousand pounds, were transferred from its coolers to the steamship *Caliwaii*. During the transfer the meats were trimmed, the scraps being placed in cans which went into the garbage. Garbage from the steamship *City of Los Angeles* was collected several times between December 20 and December 29. Part of the garbage was hauled to the Haas ranch and part to another hog-feeding establishment. Fortunately, the trucks used in the transfer of the garbage from San Pedro to the Haas ranch had been used for no other purpose.

The evidence, when assembled and analyzed, showed that the garbage which contained the scraps from the South American meat had been taken to the Haas ranch. It was noteworthy also that the hogs which were the first to show signs of foot-and-mouth disease had received meat scraps about 11 days before they were observed to be lame. Eleven days is within the normal incubation period for foot-and-mouth disease. As further evidence of the source of infection, an employee of the ranch stated that in the garbage he had

observed crockery marked with the name of the steamship *City of Los Angeles*.

In view of the danger that the meat transferred to the steamship *Oahu*, as previously mentioned, carried infection of foot-and-mouth disease, the bureau notified its inspector at Honolulu, Hawaii, that the steamer was en route to that port. This action, which led to the burning of all garbage from the vessel on arrival, was taken to protect the Hawaiian Islands from infection by the disease.

QUARANTINED AND ADJACENT AREAS CLOSELY SUPERVISED

Following the burial of the infected herd of swine, veterinarians were assigned to make a complete survey of the surrounding territory, including frequent inspection of the livestock, so that any spread of the disease would be detected promptly. Within a 3-mile radius of the infected premises were 18 dairies, all of which were kept under close veterinary observation. There was also one other hog ranch collecting and feeding garbage from San Pedro. This ranch had about 3,000 hogs which were likewise kept under close inspection.

CLEANING AND DISINFECTING TRUCKS

There were no livestock loading or unloading points on any railroad within a 3-mile radius of the infected premises. Practically no livestock was handled by the railroads from points within the county, all movements from that area being by truck; hence it was necessary to arrange for cleaning and disinfecting all trucks and trailers used in handling livestock, livestock products, and feed. (Figs. 1, 2, and 3.)

This work proceeded in a very satisfactory manner under official supervision. Trucks that had been cleaned and disinfected were so marked with a conspicuous placard. Veterinarians, stationed at the various reduction works, closely scrutinized all dead animals, and all trucks containing such animals were cleaned and disinfected before being permitted to leave.

SUPERVISION OF STOCKYARDS AND FEED LOTS

As a precautionary measure, the operations of the Los Angeles Union Stock Yards were placed under close veterinary supervision. All the packing houses and yards in the packing-town district were likewise supervised. No feeder or stocker animals were permitted to leave these yards, the trade being confined entirely to livestock slaughtered at establishments having official inspection. An inspector also arranged with the yard company to have a number of test animals scattered throughout the yards.

Efforts were made to move, as soon as possible, all feed-lot cattle within the quarantined area which were ready for slaughter and were not near infected premises. There were also about 35,000 hogs in 34 garbage-feeding plants in the territory under supervision. Nearly all of these, however, were a considerable distance from any of the infected premises. The owners were induced to market these animals as soon as they were ready for slaughter.

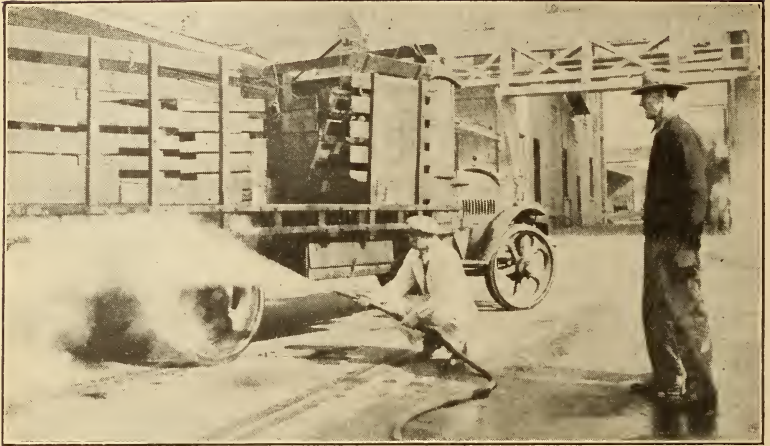


FIGURE 1.—Steaming a truck preparatory to disinfection. All trucks used for livestock feed, milk, and related products, operating in the quarantined area, were cleaned and disinfected under official supervision on completion of each trip



FIGURE 2.—Motor police inspecting trucking permit. All roads in quarantined area were patrolled by motor police. No truck was permitted to operate in closed area without an official permit

MOVEMENT OF CATTLE FROM FEED LOTS

From a disease-eradication standpoint it is highly desirable to have all finished livestock go to market, thereby reducing the number of susceptible animals in a given area. Several thousand cattle were in feed lots in Los Angeles County at the beginning of the outbreak and were ready for market at a time when the Los Angeles market was oversupplied. At the suggestion of the Secretary of Agriculture, however, the Secretary of the Navy arranged for the purchase of a considerable quantity of fresh beef on the Los Angeles market for use by the Navy. This action materially relieved the situation.



FIGURE 3.—Hay delivered at roadside of dairy. No trucks were allowed to enter premises in the quarantined area

SECOND INFECTED HERD DISCOVERED JANUARY 30

For a week after the slaughter and burial of the hogs on the infected ranch no new cases of the disease appeared. But on January 30, after 10 days had elapsed, A. T. Keel, living about 6 miles southwest of the Haas premises and $1\frac{1}{2}$ miles northwest of Downey, Calif., called in a veterinarian to see a sick cow. His diagnosis was foot-and-mouth disease, whereupon plans were immediately made to eradicate this new infection.

Guards were placed on the premises immediately, and a heavy chicken-wire fence 7 feet high (fig. 4) was built around the corrals, barn, milk house, and dwelling. This was an innovation and had a very beneficial effect on the control of people, chickens, and dogs, as well as having a good, psychological effect. Trenching equipment was promptly ordered, and the necessary excavation was ready before noon of the following day, and before 10 p. m. the herd of 51 cattle was appraised, slaughtered, buried, and well covered.

The means by which this herd became affected is not positively known, but the available history indicated that infection was carried there by a traveling sack buyer.

THIRD HERD DISCOVERED AND SLAUGHTERED FEBRUARY 2

Adjoining the Keel premises and separated only by a fence was a dairy herd composed of 75 purebred and grade cattle, owned by Houston Parsons & Son. Because of the probability that this herd also would shortly show signs of the disease, it was inspected several times a day. But symptoms of foot-and-mouth disease did not appear until about noon February 2. The disease was discovered just

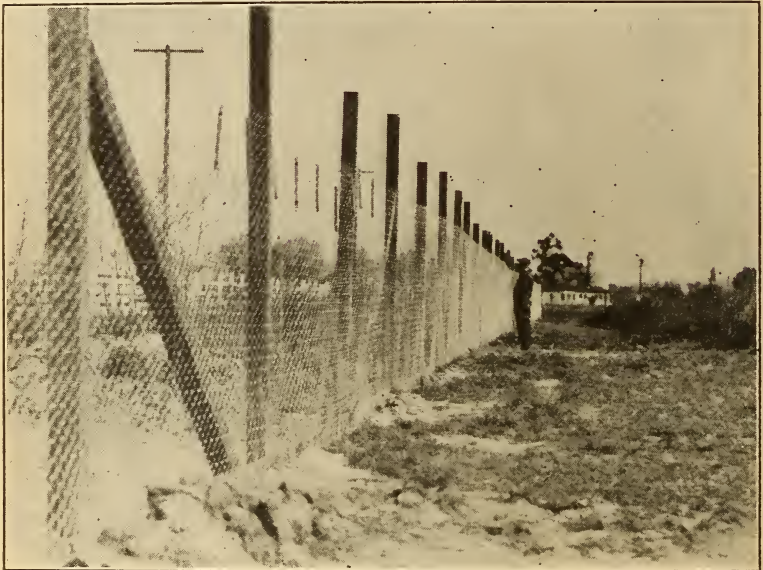


FIGURE 4.—Seven-foot chicken-wire fence around infected premises. A 24-hour guard system was maintained on all quarantined premises

as one small vesicle made its appearance on the tongue of one animal. Appraisal of the herd followed, and slaughter and burial were completed early that night.

FOURTH HERD DISCOVERED AND SLAUGHTERED FEBRUARY 6

Inspection work was then extended to embrace the territory surrounding these premises. Acting on a telephone message from David Jorritsma, 6 miles to the southwest, who reported that he had a sick cow showing symptoms resembling foot-and-mouth disease, a veterinary inspector made an examination and at noon, February 6, reported a positive diagnosis. The cow was part of a herd of 33 cattle, all of which were appraised, slaughtered, and buried that afternoon.

The actual contact between this herd and other infected premises was not definitely established, but the evidence pointed to a calf

buyer as the carrier in this instance. The owner reported that a buyer was on the premises and purchased two calves January 30. The Jorritsma herd was within a few miles of the highly developed dairy district established about Hynes, Calif., and the infection in this herd caused serious apprehension for the safety of herds in the Hynes district.

FIFTH HERD SLAUGHTERED FEBRUARY 16—LAST CASE

At this point in the campaign, however, a lull occurred, and no further infection appeared until 11 a. m., February 16, when a herd belonging to George Stepanian, 2½ miles southeast of Downey, showed evidence of infection. This herd of 67 cattle was appraised, slaughtered, and buried the same day. The source of infection was traced positively to a calf buyer who had been in the Keel corrals, January 30, and had visited the Stepanian farm the same day. This was the last infection of the outbreak.

A large number of dairies to which the calf buyer was traced after he had visited the Keel ranch were placed under quarantine and guard, and as a further precaution they were also inclosed with wire netting. Fortunately, no further signs of the disease appeared. Livestock owners should realize that they incur a serious risk in permitting calf buyers, sack dealers, manure merchants, dead-animal collectors, and others to come on their premises during outbreaks of highly infectious diseases.

CLEANING AND DISINFECTION OF PREMISES

In all instances the cleaning and disinfection of premises was begun on the day the animals were slaughtered or on the day following. Details of these operations are described in Farmers' Bulletin 666, Foot-and-Mouth Disease, and in accounts of former outbreaks. Hence it is deemed unnecessary to repeat the descriptions here.

TRACING POSSIBLE CARRIERS OF INFECTION

The outbreak is noteworthy for promptness in tracing such commodities as manure, milk, sacks, and hay that were removed from premises shortly before foot-and-mouth-disease infection was diagnosed there. Cars used in transporting manure from premises where infection developed soon after were cleaned and disinfected. The manure was spread in walnut and citrus groves and plowed under. Sacks were located and burned.

In several instances family cows and goats kept near infected premises were condemned and slaughtered as a precautionary measure. This was especially desirable when the stock was owned by itinerant families which might decide to move at any time, taking their livestock with them. The movement of animals having the disease in the incubative stage would obviously tend to set up new centers of infection.

TYPES OF LESIONS OBSERVED

A feature of the symptoms and lesions noted in this outbreak was the occurrence, among hogs, of extremely large vesicles on snouts, in

the interdigital space of the feet, and around the dewclaws. The vesicles on the snout were on the upper side and were extremely large, a number of them capable of holding at least a half ounce of fluid. Affected hogs when walking did so only with evident pain, accompanied by squealing. Their sore feet caused some hogs to walk on their knees, as shown in Figure 5.

Temperatures of affected hogs sometimes exceeded 105° F., and hogs in the early stages of the disease gave evidence of undergoing great pain. As the temperatures of the hogs began to drop, after the vesicles on the feet had broken, it was noticeable that they squealed less and presumably were in less pain. Tongue and teat lesions of cattle are shown in Figures 6 and 7.

EXTENT AND NATURE OF QUARANTINE

The outbreak interfered but slightly with the agricultural pursuits and general business of southern California. Quarantines



FIGURE 5.—Hogs of the Haas ranch walking on their knees on account of sore feet caused by foot-and-mouth disease. The infection was first noticed in this pen

established by neighboring States and by foreign countries were limited in most cases to livestock and their products, hay, straw, manure, and other products associated with livestock. Some of the quarantines, however, embraced surrounding States and probably were much more extensive than even a wide margin of safety required.

The five infected herds were all in an area less than 5 miles wide and 15

miles long. The territory of "closed quarantine" was about 18 by 22 miles in its greatest extent.

Quarantine orders issued by the Bureau of Animal Industry, United States Department of Agriculture, were as follows:

B. A. I. Order 314, effective January 19, announcing the presence of the disease and quarantining the portion of Los Angeles County within a radius of 3 miles of the town of Rivera.

B. A. I. Order 314, amendment 1, effective February 2, announcing that the disease existed outside of the area originally quarantined and increasing the area to which the quarantine regulations applied.

B. A. I. Order 314, amendment 2, effective March 9, reducing the size of the quarantined area.

B. A. I. Order 315, effective January 25, governing the importation of garbage from regions in which rinderpest or foot-and-mouth disease existed (equivalent to the exclusion of such garbage).

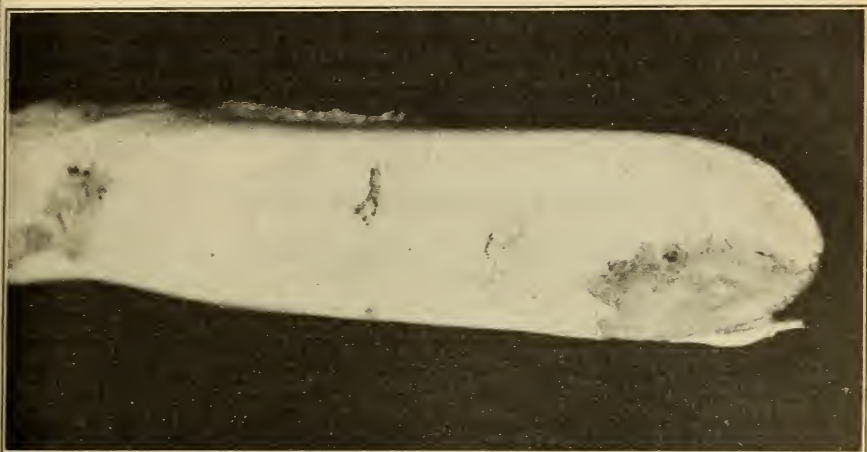


FIGURE 6.—Tongue lesions of cow held for natural exposure



FIGURE 7.—Well-marked lesions of foot-and-mouth disease on teat of cow

B. A. I. Order 316, effective March 18, revoking the quarantine established by B. A. I. Order 314 and its amendments. This order was virtually an official announcement that the disease was eradicated.

Shortly after the suppression of the outbreak, the department issued (May 9) B. A. I. Order 318, effective August 1, regulating the importation of dressed poultry from regions in which rinderpest or foot-and-mouth disease existed. The essential requirement of this order was the removal of the feet of dressed poultry, especially since such feet commonly are disposed of as garbage.

PRESS RELATIONS AND RADIO

To keep the livestock industry and the public informed concerning the number and location of infected premises, the department issued frequent statements to the press, giving the essential facts concerning the outbreak. Further publicity was handled locally. In addition, announcements were made through a chain of radio stations on several occasions. These official statements constituted the principal publicity that the outbreak received, and there was a gratifying lack of sensational news articles.

NEW METHODS USED DURING THE OUTBREAK

The methods used to suppress the disease closely paralleled those of former outbreaks with respect to general policies. Success in limiting the spread of infection to only five premises is attributed to the very prompt diagnosis and slaughter of affected and exposed animals. In the case of the Parsons herd the infection was discovered in its incipiency by means of temperature readings. Only one cow was affected. At the time her temperature was taken in the morning the cow showed only an elevation of temperature, there being no visible lesions. Vesicles developed later in the day. This herd was being kept under very close supervision, since it was known to have been exposed.

The use of chicken-wire fences for inclosing infected premises is a noteworthy detail of the work. The fences were not only an effective barrier to roving dogs, cats, and poultry, but also excluded persons having no business on the premises. These barriers also gave assurance that hay, manure, and other possible carriers of the disease were not removed from the premises without authority from the inspectors.

Another innovation was the use of sodium hydroxide for the disinfection of clothing worn by inspectors and other employees. (Fig. 8.) Clothes were dipped in a 1½ per cent solution of this disinfectant, which was used in accordance with the findings of the foot-and-mouth-disease commission of the United States Department of Agriculture.¹

COOPERATION FROM STATE AND LOCAL OFFICIALS

As shown in Figure 9, the 1929 outbreak was of shorter duration and involved fewer animals than any previous visitation of this dis-

¹OLITSKY, P., TRAUM, J., and SCHOENING, H. W. REPORT OF THE FOOT-AND-MOUTH-DISEASE COMMISSION OF THE UNITED STATES DEPARTMENT OF AGRICULTURE. U. S. Dept. Agr. Tech. Bul. 76, 172 p., illus. 1928.

ease. Prompt diagnosis, slaughter, and burial made these results possible, but such activities in turn depended on the full cooperation of State and local officials. Early in the outbreak Governor Young, of California, assured his full support of any measure necessary to control the disease. He issued instructions that a force of 24 motorcycle officers be sent into the district. Their duty was to patrol the roads, keep outsiders from going upon premises where livestock was kept, and curtail the movements of the occupants of such premises as much as possible.

George H. Hecke, director of the State department of agriculture, likewise gave the full cooperation of his office by providing necessary men and materials, and besides devoted personal attention to the work. The success of the eradication measures was a result also of the counsel and administrative assistance of A. W. Miller, representing the Washington office of the United States Department of



FIGURE 8.—Disinfection tents at an infected dairy. All employees were required to bathe and change clothes during the time the herd was under observation

Agriculture, and of Lee A. Strong, assistant to Mr. Hecke, representing the State department of agriculture. Much credit is also due Federal, State, and county veterinarians and other employees who participated so efficiently in eradicating the outbreak. The Los Angeles Chamber of Commerce and numerous other organizations gave their hearty support and helped in various ways to facilitate the work. Owners of infected herds also gave excellent cooperation, thereby making possible the appraisal, slaughter, and burial of herds in record time.

APPRAISALS AND INDEMNITY PAYMENTS

As in former outbreaks, the Government and the State compensated owners for livestock slaughtered because of foot-and-mouth disease, the full appraised value being paid. Appraisals were based on the meat, dairy, or breeding value, except that in the case of appraisement based on breeding value the amount for any animal

is limited to three times its meat or dairy value. The department has ruled also that, except in cases of an extraordinary emergency, to be determined by the Secretary of Agriculture, the payments by the United States Government for any animal shall not exceed one-half of any such appraisements.

The California Legislature was not in session when the disease appeared, and the State had no fund that could be used for meeting its share of indemnity payment. Acting under the "extraordinary

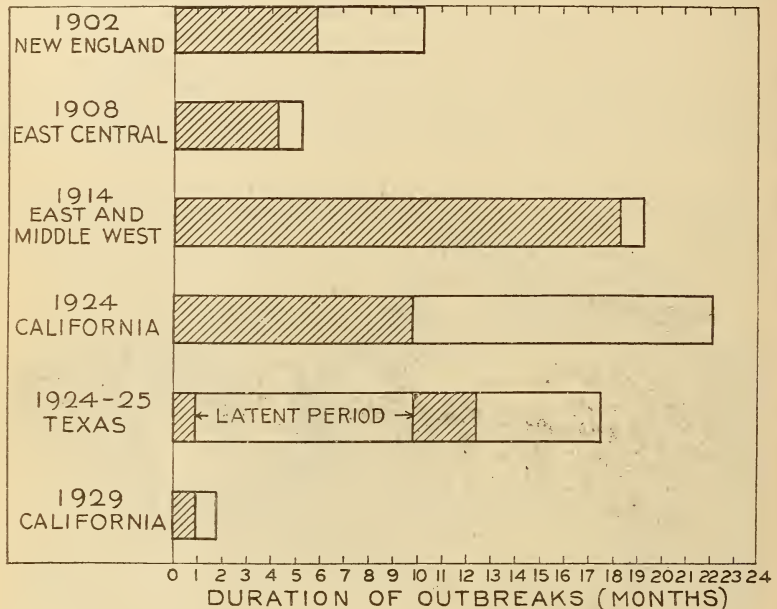


FIGURE 9.—Duration of foot-and-mouth-disease outbreaks and subsequent quarantines in the United States since 1900. Shaded portions show active period of outbreak from first quarantine to disposal of last herd; blank space shows further time elapsed to removal of final quarantine. Note latent period of nine months in Texas outbreak of 1924-25

emergency" clause, the department paid the full indemnity until the legislature convened, on February 18, and made State money available for indemnity and reimbursed the department for funds advanced. Though the arrangement was satisfactory in this case, the outbreak being small, it would be highly desirable for State legislatures to create emergency funds for use on such occasions.

Table 1 is a statistical summary of the outbreak, and Figures 9 and 10 show graphically its extent as compared with other outbreaks that have occurred since 1900.

TABLE 1.—Statistical summary of the outbreak of foot-and-mouth disease in Los Angeles County, Calif., in 1929

Owner and address	Outbreak diagnosed	Animals affected or exposed				Date of slaughter	Disinfection completed ¹	Appraised value of animals slaughtered
		Cattle	Swine	Goats	Total			
Frank B. Haas, Rivera.....	Jan. 17	1	3,271	-----	3,272	Jan. 19	Feb. 2	\$59,822.60
A. J. Keel, Bell.....	Jan. 30	51	-----	-----	51	Jan. 31	Feb. 5	10,580.00
Parsons & Son, Los Angeles.....	Feb. 2	75	-----	-----	75	Feb. 2	Feb. 7	15,500.00
David Jorritsma, Hynes.....	Feb. 6	33	-----	-----	33	Feb. 6	Feb. 6	6,410.00
George Stepanian, Downey.....	Feb. 16	67	-----	-----	67	Feb. 16	Feb. 20	10,865.00
29 owners of exposed livestock in vicinity of infected premises.....	-----	50	20	23	93	-----	-----	4,361.40
Total.....	-----	277	3,291	23	3,591	-----	-----	107,539.00

¹ Property to the extent of \$2,419.10 was destroyed, chiefly as a part of cleaning and disinfecting operations.

CONCLUSIONS

Although the possibilities that this outbreak would become widespread were very strong, the successful outcome was due to the following four circumstances:

1. The early discovery of the disease.
2. The assistance given by local agencies.

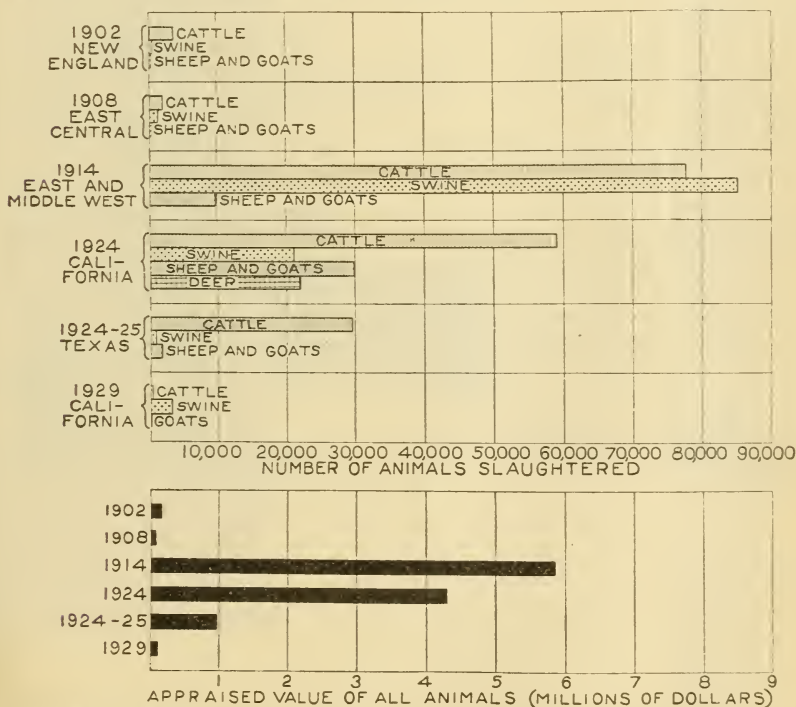


FIGURE 10.—Number of each kind of animals and appraisal value of all animals in foot-and-mouth outbreaks since 1900

3. The favorable attitude of the people—they remembered the lessons learned during the 1924 outbreak.

4. The assistance of the press in withholding sensational articles and of the Los Angeles Chamber of Commerce and organizations of milk distributors, livestock owners, packers, and others in standing ready at all times to aid the inspection forces.

ORGANIZATION OF THE UNITED STATES DEPARTMENT OF AGRICULTURE

January 20, 1930

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<i>Assistant Secretary</i> -----	R. W. DUNLAP.
<i>Director of Scientific Work</i> -----	A. F. WOODS.
<i>Director of Regulatory Work</i> -----	WALTER G. CAMPBELL.
<i>Director of Extension</i> -----	C. W. WARBURTON.
<i>Director of Personnel and Business Administration.</i>	W. W. STOCKBERGER.
<i>Director of Information</i> -----	M. S. EISENHOWER.
<i>Solicitor</i> -----	E. L. MARSHALL.
<i>Weather Bureau</i> -----	CHARLES F. MARVIN, <i>Chief.</i>
<i>Bureau of Animal Industry</i> -----	JOHN R. MOHLER, <i>Chief.</i>
<i>Bureau of Dairy Industry</i> -----	O. E. REED, <i>Chief.</i>
<i>Bureau of Plant Industry</i> -----	WILLIAM A. TAYLOR, <i>Chief.</i>
<i>Forest Service</i> -----	R. Y. STUART, <i>Chief.</i>
<i>Bureau of Chemistry and Soils</i> -----	H. G. KNIGHT, <i>Chief.</i>
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<i>Bureau of Biological Survey</i> -----	PAUL G. REDINGTON, <i>Chief.</i>
<i>Bureau of Public Roads</i> -----	THOMAS H. MACDONALD, <i>Chief.</i>
<i>Bureau of Agricultural Economics</i> -----	NILS A. OLSEN, <i>Chief.</i>
<i>Bureau of Home Economics</i> -----	LOUISE STANLEY, <i>Chief.</i>
<i>Plant Quarantine and Control Administration</i> -----	LEE A. STRONG, <i>Chief.</i>
<i>Grain Futures Administration</i> -----	J. W. T. DUVEL, <i>Chief.</i>
<i>Food, Drug, and Insecticide Administration</i> -----	WALTER G. CAMPBELL, <i>Director of Regulatory Work, in Charge.</i>
<i>Office of Experiment Stations</i> -----	-----, <i>Chief.</i>
<i>Office of Cooperative Extension Work</i> -----	C. B. SMITH, <i>Chief.</i>
<i>Library</i> -----	CLARIBEL R. BARNETT, <i>Librarian.</i>

