TEXAS AGRICULTURAL EXPERIMENT STATIONS.

BULLETIN No. 63.

Veterinary Section.—JANUARY, 1902.—*Live Stock.*

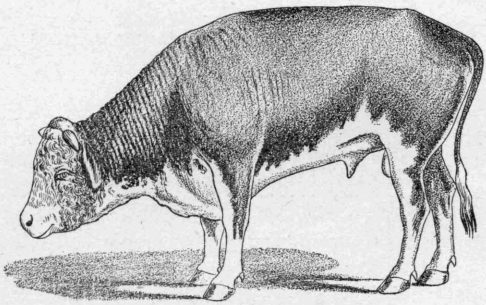
TEXAS FEVER.

(SECOND REPORT.)

[BY ORDER OF THE COUNCIL.]

POSTOFFICE:

COLLEGE STATION, BRAZOS COUNTY, TEXAS.



TEXAS FEVER FROM INOCULATION.

J. J. PASTORIZA PRINTING & LITHO. CO.,
HOUSTON, 1902.

TEXAS AGRICULTURAL EXPERIMENT STATIONS.

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TEXAS FEVER.

(SECOND REPORT.)

Experiments made by the Texas Experiment Station in Immunizing Northern Breeding Cattle Against Texas Fever.

BY M. FRANCIS, VETERINARIAN.

In the following pages will be found a continuation of the experiments begun some years ago, in co-operation with the Missouri Station, to reduce, and if possible, prevent the heavy losses that have followed the importation of Northern cattle into the infected districts of the Gulf States.

The results of our previous experiments, reported in bulletin No. 53, have been abundantly confirmed during our subsequent work.

It has been shown that a considerable degree of immunity against Texas fever can be brought about by producing an infection with the blood of Southern cattle. The result is an attack of genuine Texas fever and the effects are identical with those which follow an attack of the disease when contracted in the natural way. It remains now to explain more fully the management of the animals, because success depends in a large measure on the observance of a well defined plan of action.

The best results of inoculation depend on keeping the cattle free from ticks until they have recovered from the inoculation fevers. A good way to do this is to enclose a small pasture, which is convenient to water and shelter, some five or six months before the animals are imported and to allow no cattle to enter it. The ticks which may be in it will perish in this time if the weather has been hot. To be certain it is advisable to burn the grass off when it has become dead and dry. Such a pasture should not receive surface drainage from a ticky pen, as the eggs of ticks may be carried in by heavy rains. In case such a pasture be not available we may use a field which has been in cultivation.

It is very desirable that a field of green oats or wheat be provided for winter pasture, as either of them assist in keeping the bowels of the animals in good order during the fever stages. Our greatest losses can be traced to a disregard of these precautions.

The most favorable season of the year for importing the cattle

is from November until March. This permits the calves to pass through the inoculation fevers during cool weather and gives them time to take on ticks in the early spring when grass is soft; and to recover from the effects of both before the hot weather begins. Texas fever is much more severe when the weather is hot than when it is cool. To mention an instance illustrating this we may say that on February 22, 1901, we inoculated twenty-eight Herefords and twenty-two red polls. The primary fever period ranged from the sixth to the twelfth days. Just at this time the weather became unusually warm for this season of the year and the fever became very acute in more than half of them. Of the fifty, twenty passed red urine and four of them died. A month later, forty-nine heifers were given the same amount of blood from the same supply animal and no cases of red urine were observed among them. In this instance the weather was cool and rainy just as the animals were fevering.

The most suitable subjects for inoculation are young cattle. Young sucking calves will sometimes bear several inoculations without being affected to a conspicuous degree. We had one such calf, five months of age, which received five inoculations between January 1st and April 20th. The reactions following these were very feeble, and in no instance was fever observed on consecutive days. This can not be regarded as a natural immunity because the calf fevered subsequently on exposure to ticks and because, in an instance to be described further on in this report, a single inoculation from the same supply animal given to thirteen other sucking calves fevered all of them severely within twenty days. Of the number five passed red urine and one died.

If we inoculate calves which have been weaned (say from 4 to 6 months of age) the fever often becomes severe and prolonged. They become thin, weak, stunted and we often have trouble in keeping their bowels in order. One case passed bloody mucus and finally died of exhaustion. We used nux vomica, pepsin, bismuth and tannoform, and were careful about the feeding, but failed to control the digestion. Another calf of the same lot was affected in a similar manner, but survived. It is perhaps well in cases of marked bowel disorder to be very careful in cleaning the thermometer before using it on another animal, because we are not certain but that some bowel troubles may be conveyed to others in this way.

Our experiments indicate that the most favorable results follow the use of calves of strong constitution, from 10 to 16 months of age.

At this age they will have developed considerably and will have learned to thrive on a grain and hay ration. Those that have been pampered and stall fed usually turn out badly, because their stomachs have been ruined by high feeding and their systems will not

respond to ordinary foods during the fever stages. Plain grass fed cattle which have been raised in the open are to be preferred.

In shipping cattle South, a man should be in charge of the animals to feed and water them in the car, and thus avoid unloading in infested stock pens.

It is not safe, on arrival at destination, to drive the calves any considerable distance from the depot over ordinary roads. We have seen them become infested by ticks in going less than a mile on a cold, rainy day. We have had some heavy losses in cases where the calves have been driven twenty miles or more from the railroad and have been held a week or two before inoculation. If they be inoculated after having been infected by ticks, the fever will appear in less than three days and often causes death. It is not an easy matter to decide what to do in such cases, because we can not be guided entirely by the temperature of the animals. Almost all calves have some elevation of temperature on arrival at destination, which we call "shipping fever." We observe also high temperatures in calves which have a heavy coat of winter hair. They may show from 104 degrees to 106 degrees in the afternoon of a warm day especially if they be for some time in the direct rays of the sun.

We vaccinate them for blackleg immediately on arrival, whether they have been treated previously or not. After two days they may be inoculated for Texas fever. For blood we select a 2-year-old animal, which appears to be in good health, and one that has a reasonable number of ticks.

We know nothing about the quality of a supply animal's blood without making a practical trial of it. There are some individuals whose blood will fever almost every calf simultaneously, and there are others whose blood gives the greatest variations. We can not attribute this entirely to a variation in the susceptibility of the calves, though we find much to support it.

The first dose of blood should be small. We regard one cubic centimeter as a standard dose. We may give from 1-2 to 2 c. c. without observing any marked variation in the results. The blood is simply drawn from the jugular vein of the supply animal with a hypodermic syringe of the ordinary pattern and immediately injected hypodermically. If the supply animal be some distance from the calves to be inoculated, it may be more convenient to draw the blood with a trocar or fleam, according to established surgical rules and then defibrinate it with some sterilized mechanical object. This removes the clot and permits the blood to pass readily through the needle. The danger of infection and the effect of cold on the vitality of the germs in the blood make the former method preferable.

It is very important that the calves be marked in a conspicuous manner to prevent mistakes. The best way we have found is to

cut a number in the hair on the hip. If this be of some size the growth of new hair is usually of a different shade of color from the old, and makes the number plain for months. The calves should be well fed. We have been using equal parts bran, oats and corn chops and some cotton seed meal. We have fed sorghum, alfalfa, prairie grass and Johnson grass hays. We give about one pound of grain for every 100 pounds of live weight. Some calves will digest more than the amount stated, but it is always well to withhold full feed for some days after unloading off the cars to prevent scouring. No local effects of inoculation have been observed.

PRIMARY REACTION.

The fever resulting from inoculation appears from the eighth to tenth days as a rule, and continues from four to eight days. We call this the "primary reaction." It appears suddenly with a morning temperature of 104 degrees or more and is usually higher in the afternoons. We sometimes find high afternoon temperature a day or two before it becomes continuous. The calves may have fever, yet eat as well as usual, and show no outward signs of sickness for several days. It is a good plan to take the temperature of every animal daily during the fever periods, if it can be done quietly. Those that are wild had better not be disturbed. Gentle ones can be managed in the stalls or in a chute. Bulls can often be managed while eating at their troughs, but heifers are more sensitive and require some restraint to prevent breaking of the thermometers.

Sometimes the primary fever is very mild, say 103.5 to 104 for only a day or two. In very rare instances no fever was detected at the usual time, but appeared about the time the secondary reaction was due.

Attention is called to this because it sometimes occurs that the owner of the cattle becomes uneasy and suggests a second inoculation if the primary reaction was very feeble. We have caused some deaths by re-inoculating too soon. In all cases we allow the primary reaction to run its course so long as the fever stays within reasonable bounds. If there be any indications of constipation or much loss of appetite, we give a large dose of salts to flush the whole bowel. To a calf 10 to 12 months of age we give one and one-half pounds at a dose. This requires from eight to twelve hours to act. A much better plan is to graze the calves on green oats or wheat. These keep the bowels loose and medicines are seldom necessary. In those parts of the State where the prickley pear is available, it may be singed in the fire to remove the thorns, then cut to suitable size, sprinkled with bran and fed.

As the fever goes on we notice loss of appetite, emaciation, pale-

ness, debility and ginger colored bowel discharges. Some calves refuse both food and water. We notice also bloody mucus discharged from the bowels, and occasional bloating. Those that become very weak will lie down most of the time and make but little effort to follow the others about the pasture. If the fever remains high, say 106 or more, after the cathartic has acted, it can be lowered by injections of cold water into the bowels and by brushing cold water over the back and sides of the body. Sometimes red urine appears. We can not control it. It indicates a very rapid destruction of the red blood corpuscles and the discharge of the coloring matter through the urine. The blood sometimes becomes so impoverished as to carry ten per cent., or even less, of corpuscles.

In these cases we observe a peculiar staring of the eyes, probably due to the lack of nourishment of the retina. They seem unable to recognize familiar objects and may even attack the regular attendant as if delirious. We notice also trembling of the muscles, a staggering gait and sometimes they die pushing the head against the manger or fence.

We have had some pregnant animals abort and others that carried the foetus the full term without apparent injury.

The fever usually terminates abruptly about the twentieth day after inoculation. The rapid falling of temperature is a critical time with the animal because most of the deaths occur at this time from collapse. It may fall one degree per hour until it has become subnormal. When we find it falling so rapidly we convey the animal to a warm place, put on a blanket, and give stimulants. We have used whiskey, tincture of nux vomica, Fowler's solution of arsenic and hot injections of salt water into the bowels. We must act with the greatest care in such cases so as not to produce overstimulation and hasten death. After the fever has run some days we often notice a desire to lick up dirt. The calves will go to certain places in the pens and lick the ground until holes of considerable size have been made. They swallow much of this dirt, and it can be seen in the bowel discharges. In some sandy parts of the State this becomes a serious matter, because the sand lodges and produces obstructions in the stomach and bowels. For this we have given salts, linseed oil, and in one very obstinate case we gave eserine. We were successful in bringing away accumulations of sand covered with mucus that appeared to be a perfect cast of the bowel. These cases of sand and mud impaction can usually be prevented by grazing the calves on green oats or wheat.

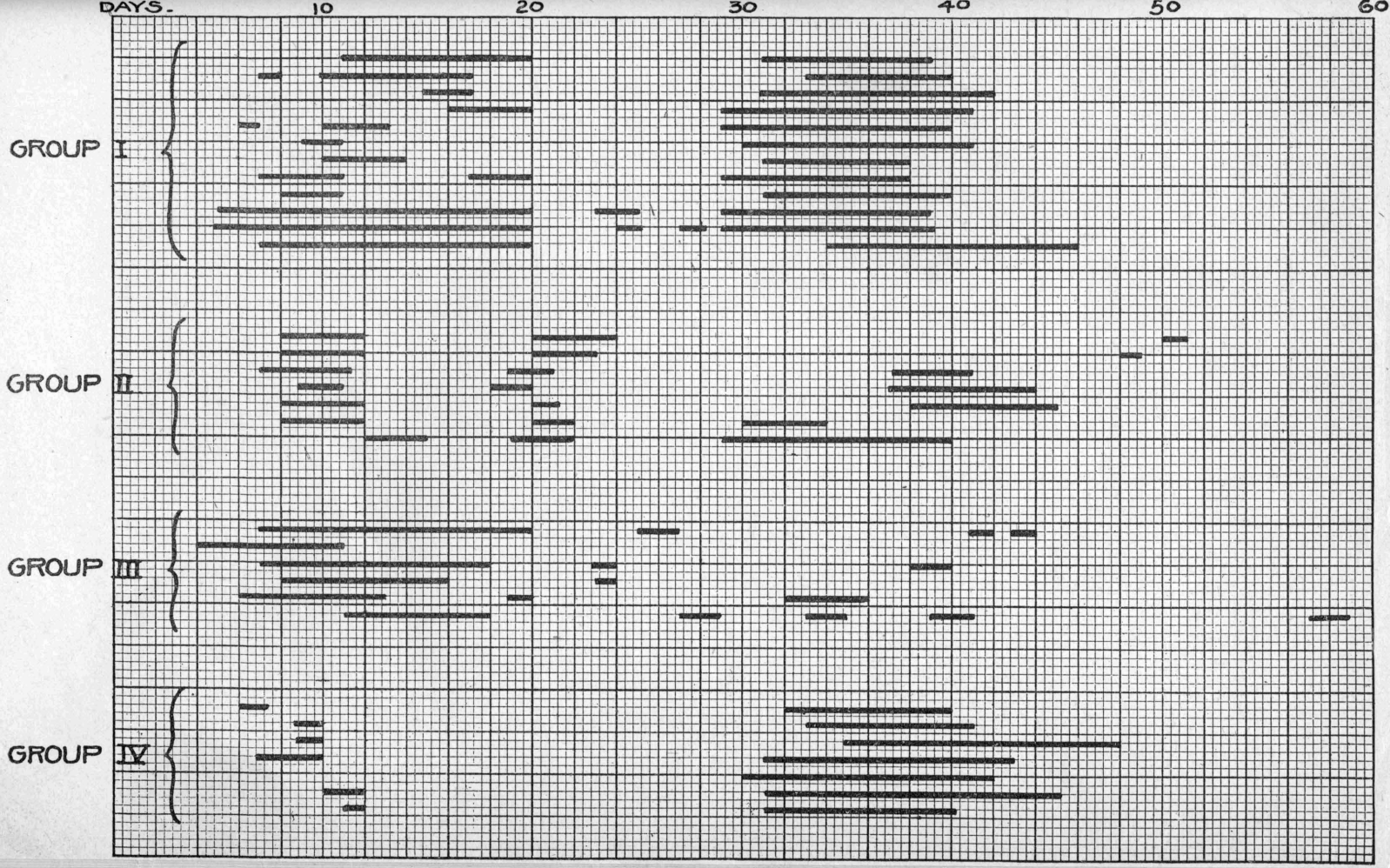
SECONDARY REACTION.

The secondary fever period begins about the thirtieth day after inoculation and continues about eight to ten days. It is very simi-

lar to the primary one and should receive the same attention. The effects on the calves are fully as severe as the primary, and they often become very thin and weak, and the hair becomes dead and falls out along the sides of the neck and between the thighs.

We seldom observe red urine during the second fever if the primary one has been well marked. If a large number of animals be under observation we find some irregular forms of the disease. In a small number we observed three well defined reactions. The first from the eighth to the twelfth days, the second about the twentieth day, the third appeared in two animals on the thirtieth day, in three others about the thirty-seventh day, and in two others about the forty-sixth day. (See graphic record, page 9, group II). We observed also a few cases in which the primary fever was long and no well defined secondary period, but fever for one or two days at a time. (See group III.) In a few instances the primary fever was very mild, say 103.5 to 104 for one day only, to be followed by a very severe secondary. In one instance no primary fever was detected, but a severe secondary at the usual time. (See group IV on graphic record.)

GRAPHIC RECORD OF TEXAS FEVER, SHOWING RELATIVE DURATION OF REACTIONS FOLLOWING INOCULATION.



After recovery from the fever the calves resume eating and regain flesh and strength slowly. It is usually about sixty days before they are strong enough to bear exposure to ticks. It is probable that all of them fever more or less on exposure to ticks, which shows that a perfect immunity is not brought about by the inoculation fevers. These attacks are seldom fatal if the animals receive attention at the proper time. It seems that a perfect immunity to the disease requires many months and a number of infections either by repeated inoculations with blood or by the ticks themselves.

If the fever periods have been well marked, and there appears loss of flesh, deadness of hair, or infestation by ticks, we make no more inoculations with blood. In one lot of forty-nine heifers, in which we gave a second dose of 1 c. c. of blood, sixty-seven days after the first, we found marked reactions in almost one-half of the animals. Seven had red urine and three died. Evidently a perfect immunity was not brought about by one inoculation in this instance. In other lots we have given two and three inoculations without serious illness following.

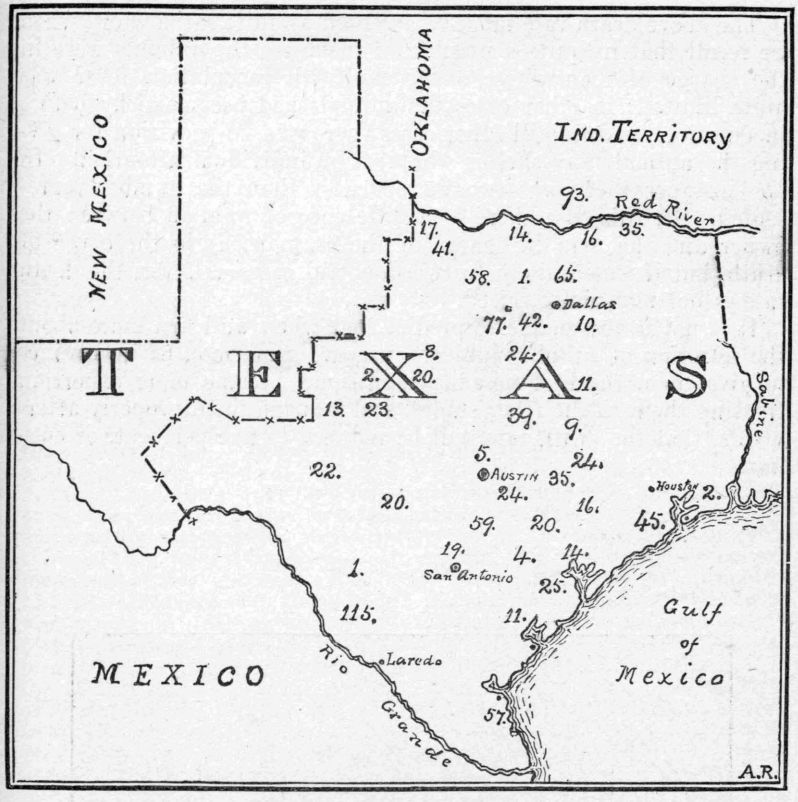
As a general rule the cattle may be exposed to ticks about sixty days after inoculation. We prefer this to occur in the early spring so as to have the fever, if any, before the hot weather. We observe relapses during the summer. There may be definite fever periods of several days each, or there may be high temperatures in the afternoons.

It is important that the calves be fed once a day during the summer. It pays to do it because it keeps the calves growing and keeps up their power of resistance.

If the bulls be allowed to run with the cows without feeding, we notice many of them become thin, stop growing, do not sire many calves, become grossly infested with ticks and have fever.

Even those which pass the entire summer in the pasture with native cattle and ticks will sometimes relapse in the late fall and die. We have had a small number of deaths from fever during the second summer after inoculation. These are mostly among cows with their first calves. This seems to be a hard time on young cows, and some of them become thin and weak from suckling the calves. The ticks usually attack those of reduced vitality, in great numbers and relapses of Texas fever are quite common. If it be desirable to use bulls the first summer they may be divided into three lots.

Lot I may be turned with the cows for a week or ten days. Then bring them in and turn out lot II for an equal time, then bring those in and turn out lot III. In this way we can get considerable work from them and yet be able to feed them and prevent excessive tick infestation. If they show much fever from ticks they should receive a large dose of salts and be kept quiet and in the shade until the attack passes off.



MAP OF TEXAS, SHOWING THE DISTRIBUTION OF MORE THAN ONE THOUSAND INOCULATED CATTLE.

NUMBER OF ANIMALS INOCULATED AND THE MORTALITY.

From November, 1899, to November, 1901, we have inoculated 1251 animals. These may be classified by breeds:

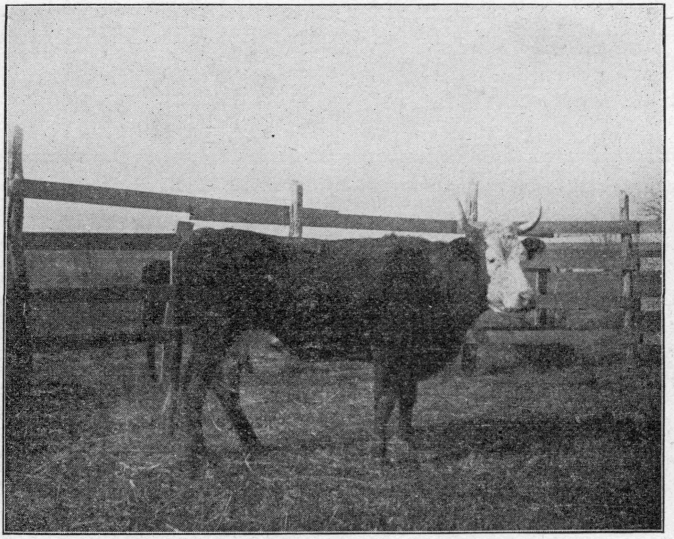
Jersey	1
Holstein	1
Poll Angus	10
Sussex	14
Polled Durham	40
Red Poll	209
Hereford	428
Short Horn	548
Total	1,251

Number of deaths from fever, 116.

Death rate: 9.21 per cent.

The above death rate must be accepted as quite satisfactory when we recall that in quite a number of instances the animals were in the charge of men whose experience with inoculation fever was quite limited; in other cases the animals had become ticky before inoculation; and in still other cases there was no provision for giving the animals any shelter whatever or individual attention. In one instance there was two more deaths than the number represented. In this case there is a difference of opinion between the owner and the man in charge of the animals, as to the cause of death, but if we admit these two doubtful cases as fever, the death rate is not materially raised.

It is not unreasonable to predict that when we learn more about the selection of suitable subjects, prepare some months in advance to give them the best possible conditions, become more expert in treating them in the fever stages, and manage them properly afterwards, that the death rate will be reduced to five per cent. or even less.



GRADE HEREFORD COW WHICH SUPPLIED BLOOD FOR A LARGE NUMBER OF INOCULATIONS AT THE STATION.

PART II. THE EXPERIMENTS IN DETAIL.

A. & M. College, One Holstien Bull.

This calf, at the time of arrival from Nebraska, March 18th, 1900, was about 11 months of age. He was rather thin in flesh and weighed 620 pounds. On March 20, he was given 1 c. c. of blood sub-cutaneously. Fever appeared on the *tenth day* a. m., 103.8 degrees, p. m. 104.4 degrees; *eleventh day* a. m. 104.7 degrees, p. m. 106.8 degrees.

Twelfth Day—8 a. m., 106.6, gave salts; 12 m., 106.5; 2 p. m. 105.6; 6 p. m., 107.4; 8 p. m., 106.7; 10 p. m., 106.2.

Thirteenth Day—8 a. m., 106.5; 9:30 a. m., 107; 12 m., 106.4; 3 p. m., 107; 5 p. m., 106.9, bloody urine; 10 p. m., 106.

Fourteenth Day—2 a. m., 104.5, bloody urine; 8 a. m., 102.8; 12 m. 102.4; 2 p. m., 102.7; 6 p. m., 102.4, ate hay and grain; 10 p. m., 101.8.

Fifteenth Day—8 a. m., 101.8; 10 a. m., 102.2, ate grain; 2 p. m., 102.6, urine clear; 6 p. m., 103.6, ate well; 10 p. m., 103.

Sixteenth Day—2 a. m., 102.7; 8 a. m., 102.3; 6 p. m., 103.

No further fever was detected until the nineteenth and twentieth days, and again on the twenty-fourth and twenty-fifth days. The temperature was usually normal after this in the mornings, but often showed some elevation in the afternoons. No prolonged secondary fever period was observed. The bull recovered his strength promptly and was not exposed to ticks during the summer. About December he was turned on ticky grounds and immediately became infested with a large number of ticks. No fever attended this. These details are mentioned to show that a practical immunity was brought about in the animal by one innoculation and that it lasted nine months without reinfections. During the summer of 1901 the bull became very ticky and when the hot weather and drouth set in, and grass became very short, he lost flesh and appeared to have some fever. He made a good growth, however, sired about fifty calves, and at the close of the summer weighed about 1100 pounds. There have been no evil results of inoculation in this bull.

Anson, Twenty Hereford Bulls.

This lot of Hereford bulls was imported from England and arrived at the ranch, some twenty-five miles from Coleman, December 21st, 1900. They ranged from 10 to 14 months of age and were in fair flesh. January 2, 1901, each calf received 1 c. c. of blood sub-cutaneously. Fever appeared on the 9th and two died and two others died of blackleg. By the expiration of six weeks five more had died, one from snake bite and one from Johnson grass. No further sickness was noticed until the middle of May, when they fevered again, presumably from ticks. No deaths occurred, however, from the last fever. The calves held up quite well in flesh on very little feed and have done well since.

Brown & Bell, Seventeen Herefords.

Lot I consisted of sixteen animals. They were raised in Hartley county, Texas, and taken to San Antonio, December 23d, 1899. They were inoculated with 1 c. c. of blood January 14th, 1900, on the ranch seven miles from the city. No conspicuous fever resulted from the inoculation and a second dose was given February 7th. Fever ap-

peared from the second dose of blood. A bull was found sick March 14th and given medicines, but he died. A heifer fevered and remained in the underbrush several days without attention. She was found dead. The remainder of the calves recovered and passed through the summer and made a satisfactory growth.

January 6, 1901, we received at the station an 8 months Hereford bull calf from Plattsburg, Mo. He was in good flesh and weighed 680 pounds. On January 13th he was given 1 c. c. of blood. Primary fever appeared promptly from the ninth to the nineteenth days. The bull recovered in good shape and held up well. The second fever appeared from the thirty-second to forty-second days. This caused deadening of the hair and much loss of hair along the sides of the neck.

We fed equal parts of oats, bran and corn chops and prairie hay. During the fifty-four days at the College, twenty of which he had fever, the bull gained forty pounds in weight. This was mostly natural growth as there was an actual loss of flesh. The bull was shipped to the ranch March 6th, and has since done well and has made a very satisfactory growth.

Burgess Forty-six Shorthorns.

This lot consisted of twenty-three bulls and twenty-three heifers. All were bred in Kentucky. They varied in age from eight to sixteen months. They arrived at the ranch in Tarrant county, Texas, March 1st, 1900. March 22nd they were inoculated. The dose varied from 1-2 c. c. to 1 c. c., according to the size of the animals.

March 31—No fever among the calves yet.

April 7—We have not noticed any sickness among the calves yet.

April 16—We are running the calves on green wheat. They are doing very well. No fever. We feed them well.

May 1—Gave five of them a second inoculation with 1 c. c.

June 30—Three of the calves have had fever recently; two of them died.

August 21—Two more calves have died of fever recently.

November 2—Since August we have lost two more calves, making six in all from fever out of forty-six.

Cary, Ninety-three Head.

Lot I consisted of sixty-three shorthorn heifers and three shorthorn bulls. All were raised near Sedalia, Mo., and had been taken to Armstrong, Indian Territory, in December, 1900. They were turned on tick infested grounds and took on ticks. One bull had died of fever and six others had shown some fever before treatment was attempted. On January 5th those which showed no fever were inoculated. These cattle were kept in the open, day and night with no shelter except some trees and brush along the Little Blue river. It was impossible to give the sick ones individual attention. They were fed about fifteen pounds of cotton seed hulls and two and one-half pounds of cotton seed meal per day.

Fever appeared strongly in most of the animals, but it was not simultaneous. One bull died on the seventh day. A heifer died of blackleg on the twenty-fifth day, another heifer died of fever on the forty-ninth day after ten days of severe sickness, and still another death occurred from fever on the fifty-sixth day in a pregnant heifer. The last one had red urine.

Lot II.—On February 5th, three Hereford bulls, three shorthorn bulls and twenty-one shorthorn heifers were inoculated. Fever ap-

peared promptly in the lot, and one heifer died on the 24th, after having secondary fever two days. During March the cattle did very well. During April quite a number had fever, and Nos. 3, 62 and 69 died. Nos. 11 and 23 were very sick, but recovered. During June five heifers and three bulls died of fever. The most of these passed red urine. During August another bull was very sick but recovered. We lost eighteen in all. The remainder have since done fairly well, considering the unfavorable season.

Curry. Three Polled Durhams.

These three calves arrived at Marlin, Texas, from Missouri February 7th, 1901. The oldest one was 9 months of age. Each received 1 c. c. of blood February 13th. They were fed corn and oat chops, bran and cotton seed meal, with alfalfa and Johnson grass hay. For green stuff they ran on a barley patch, which kept their bowels loose.

By March 6th two of the calves have shown fever.

May 7th.—The youngest heifer appears to have had the fever; the oldest heifer shows no effect of the inoculation.

The bull has lost some flesh, and has the appearance of fevered cattle. Gave them a second dose of blood May 7th. The calves continued to do well until August, when the largest heifer aborted and died from the effects of it. The others had a considerable number of ticks, fevered some, but recovered and have since done well.

Coit. Thirty Shorthorns.

This lot of Missouri bred calves, though belonging to three parties, will be described in one lot, because the conditions were essentially the same in all. They were all young cattle, ranging from 12 to 18 months of age. They reached the farm in Collin county January 29th, 1901. On February 1st each received 1 c. c. of blood. The cattle were pastured on a green wheat field, and sheltered at night and during bad weather in a barn. Primary fever appeared thirteen to sixteen days later.

February 27th.—The cattle are beginning the second fever. Some are as high as 105 and 106, and many range from 103 to 104.

March 12th.—The second fever has been more severe than the first. There are many above 104 to-day. They eat dirt like licking salt. No deaths yet.

June 20th.—The cattle are doing well. Some are rather slow in recovering.

June 31st.—The calves are improving every day.

August 11th.—The cattle are doing well. No deaths from any cause yet.

J. T. Day. Thirty-five Shorthorns.

This lot of thirty-five shorthorns was from Missouri. They arrived at Rhome November 15th, 1899, and were allowed to run with Texas cattle.

December 4th.—Each received 1 c. c. of blood sub-cutaneously.

December 13th.—All of the calves are "drawn." About one-half of the bunch seem to be sick. One died last night. Several have scours, though they have not been on the green wheat for several days.

January 14th.—The large bull has since been very sick lately (secondary reaction?). He died this morning. The others are doing quite well.

March 3rd.—The calves are doing well at the present. Have not noticed any of them eating dirt. All have some ticks.

April 10th.—All the calves have ticks, but appear in good condition.

There were six deaths in all in this lot before the summer passed.

DAVIS. FOURTEEN SHORTHORNS.

This lot consisted of two bulls and twelve heifers, which had been raised in Missouri. They arrived at Gainesville, Texas, November 1st, 1900, were inoculated with 1 c. c. of blood on November 12th.

November 21st.—Three of the calves have high fever, all above 105. Gave them salts.

December 7th.—Another calf has had very high fever, 107.5. We gave her two pounds of salts, which acted freely and relieved her.

February 5th.—The heifer which was so sick in December has gotten thin. All the others are doing well.

February 12th.—These cattle were shown at the Fort Worth Stock Show in good shape.

June 20th.—The cattle are doing very well. We have run them on pasture all the time, but keep them out of the hot sun. Have given them no grain feed since grass came, and they are doing well.

August 8th.—The cattle are doing very well, and have made good growth. Sold a bull to a neighbor recently. The bull became very ticky, and fever went to 107. Gave large dose of salts, which relieved him.

EPPWRIGHT. FOUR SHORTHORN HEIFERS.

These four heifers were bred and raised near Lexington, Ky. At the time of inoculation they were 1 year old. On November 8th, 1899, each received 1 c. c. of blood sub-cutaneously.

December 4th.—Two of the heifers fevered on November 24th (the seventh day). They have been very sick, but are better now, and are eating. The other two have not shown conspicuous symptoms.

December 30th.—The two heifers which fevered have recovered, and are now doing splendidly. The other two have shown no results of inoculation.

January 18th.—The first two calves have done very well since recovery. The other two have shown no signs of fever.

February 7th.—Gave the two heifers which were not affected by the inoculation on November 18th a second dose of blood.

June 28th.—One of the heifers inoculated on November 18th and February 7th died to-day of fever. The others are doing well.

November 9th.—The three remaining heifers are doing splendidly. They have been quite ticky all summer.

FROST. TWO SHORTHORN HEIFERS.

This lot consisted of two shorthorn heifers, aged 13 and 15 months. Both were raised in Kansas, and reached San Antonio by express February 2nd, 1900. Each received 1 c. c. of blood February 7th, 1900. Fever appeared in the younger one on the fifteenth day, and lasted one day only. The second fever appeared on the twenty-seventh day, and lasted three days. The older one was more severely affected. Fever appeared from the sixteenth to the twentieth day, and the second fever from the twenty-ninth to the forty-first days. Both calves fell off considerably in flesh, though they were well fed on equal parts of bran, oats, corn and cotton seed meal, with sheaf oats and sorghum hay for roughness.

September 11th.—The calves have been kept in a barn during hot days, and turned out at nights with Texas cattle. They have carried a few ticks all the time. The younger heifer had some fever ten

days ago, which reduced her in flesh somewhat. Both are now doing well.

November 2nd.—Both heifers are in good health.

Fuchs. One Red Poll Bull.

This calf was received by express at the Station from Winchester, Ill., in December, 1900. He was a very vigorous animal, and in ordinary flesh; weighed 630 pounds. He was given 1 c. c. of blood on December 31st, sub-cutaneously. Fever appeared on the tenth day, and lasted seven days. The calf responded to liberal feeding, and showed no loss of flesh or arrest of growth. He did not appear sick at any time during the fever.

The secondary reaction appeared on the forty-second day, and continued four days. Having recovered from both fevers, the calf was sent to the owner at Burton, Texas, March 1st. Since then he has done well all summer.

Gibbons & Smith. Thirty-Five Head.

This lot consisted of thirty-five head. Shorthorns, Herefords and Polled Angus, whose ages varied from 10 to 18 months. They had been bunched at Kansas City, Mo., and had arrived at Paris, Texas, November 18th. They had a rough trip in the cars.

November 25th.—Each received 1 c. c. of blood sub-cutaneously.

December 14th.—The calves began to fever December 3rd (eighth day). Some showed but little fever. Five or six refused to eat. One bull died December 5th of fever. He passed red urine. We are feeding cotton seed meal, bran and hulls. The calves are doing well at present.

December 30th.—The calves have been fevering the past week (secondary reaction?). They seem gaunt. The hair is rough and stands up. They eat some twice a day, but without relish.

January 14th.—We are feeding each calf three and one-half pounds of hulls, one pound bran and one-fourth pound cotton seed meal a day and what hay they want. This seems to agree with them, and keeps the bowels open. They have lost some flesh since inoculation.

February 6th.—The inoculated calves have been in pasture sometime. Some of them have a great many ticks, but do not seem to be affected by them.

July 24th.—The calves are doing nicely. They have been out in pasture all summer, and have matured fine crops of ticks. Out of the thirty-five head inoculated November 25th, one died of fever December 5th and another of blackleg.

August 22nd.—The inoculated cattle are doing well. They have been in ticky pasture all summer.

Giddings. Fourteen Shorthorns.

Lot I consisted of one bull and eight heifers, all of which were bred in Indiana and Missouri. They reached the farm at Brenham January 10th, 1900, and were given 1 c. c. of blood on the 15th. These calves were run on a field of green oats, and apparently there could be no danger from ticks, but all became ticky, which gave trouble later. On February 3rd one heifer fevered severely, and was given large doses of salts. We were not successful, however, in getting a free action from the bowels, and she died two days later. The others fevered less severely, and were sent to the Station for treatment. High fever appeared in all of the calves, and they matured a large

number of ticks. The secondary fever lasted from the twenty-seventh to the fortieth day. During the fever stages we gave large doses of salts to flush out the bowels.

On March 28th the calves were turned on grass and fed once daily. A 2 c. c. dose of blood was given April 18th, and again on May 5th, making three inoculations in all.

The cattle were returned to the farm May 24th. Since then there has been no fever among them. They have grown quite well, except two heifers, which became thin and remained so until cool weather.

Lot II consisted of four heifers and one bull. The smallest weighed 540 and the largest 800. They arrived at the Station from Wisconsin December 20th, and were given 1 c. c. of blood on December 31st, 1900.

Heifer No. 1 showed a very feeble primary reaction. We found 103 degrees on the twelfth day. On the twenty-sixth day we gave her a second dose of 1 c. c. of blood. This was followed by very high fever nine days later. A question arises as to whether we may regard this as a second reaction or the primary from the second dose. The case may be noted in detail, because it illustrates the danger of re-inoculation.

Fever appeared nine days after the second dose, with a morning temperature of 105.8 degrees.

Tenth Day—8 a. m., 104.2.

Eleventh Day—8 a. m., 105.

Twelfth Day—8 a. m., 105.4; gave salts; 6 p. m., 106.4.

Thirteenth Day—8 a. m., 107.2; 6 p. m., 108.

Fourteenth Day—8 a. m., 107: 6 p. m., 108.3. Gave cold water injections; 10 p. m., 107.6.

Fifteenth Day—8 a. m., 107.6, gave salts; 6 p. m., 108. Cold water injections and cold water on back. Cold wind blowing; 7:30 p. m., 106. No treatment; 10:30 p. m., cold water injections and turned hose on body.

Sixteenth Day—3:30 a. m., 106; passed large quantities of clear urine; notices feed. Put water over the body. 6:30 a. m., 105. Notices feed. 9::30 a. m., 106. Passed large quantities of ginger-colored feces. 12 m., 103; 3 p. m., 106. Cold water injections. 4:15 p. m., 105.8. Ate some grain and hay. 9:35 p. m., 103.9.

Seventeenth Day—2:30 a. m., 103.2; 7 a. m., 101.8. Ate some. 9 a. m., 101.2; 10 a. m., 101.3. Gave whisky and blanket. 2 p. m., 101. Gave whisky. 6 p. m., 101.6

Eighteenth Day—6. a m., 101.6; 5:30 p. m., 102.8.

Nineteenth Day—6 a. m., 103.6: 1:30 p. m., 105. Gave salts and took off blanket.

Twentieth Day—7 a. m., 105.5; 1:45 p. m., 107; 6 p. m., 106.

Twenty-first Day—7 a. m., 104; 1:30 p. m., 104.8; 6 p. m., 105.

Twenty-second Day—8 a. m., 103.8.

Twenty-third Day—8. a. m., 102.

No fever after this. The heifer held up in flesh very well and gained forty-five pounds while at the Station.

Heifer No. 4 was given a second dose of blood the same day as No. 1, but no severe sickness followed.

The other heifers and the bull fevered in the usual manner from the first dose of blood. The bull became gaunt, but regained promptly.

The whole lot responded to liberal feeding in a satisfactory manner.

During the seventy-six days they remained at the Station they gained as follows: No. 1, forty-five pounds; No. 2, ninety pounds; No. 3, ninety-five pounds; No. 4, 120 pounds; bull, 110 pounds.

Since these cattle were sent to the farm they have carried large numbers of ticks. The bull showed some fever from them in May.

He has not done very well. The heifers made a very satisfactory growth during the summer.

GREENWADE. FIFTEEN HEAD.

This lot consisted of twelve shorthorns and three Polled Angus. They were shipped from Windsor, Mo., October 15th, 1899, held in a dry lot at Whitney, Texas, and inoculated December 26th, 1899, with 1 c. c. blood each.

No conspicuous sickness resulted from the first inoculation. Temperatures were not taken.

January 24th, 1900.—Gave a second inoculation similar to the first. Temperatures not taken. No severe sickness.

March 3rd.—The calves are doing well. They are kept in a lot, and not allowed to mix with native cattle. No ticks on them yet.

July 26th.—The calves have been on a small pasture with Texas cattle. Five of them show fever to-day. Gave salts and nitre. The ten others show no sickness.

August 22nd.—All the calves are doing well. No fever since August 1st. They carry a good many ticks.

J. F. GREEN & CO. ONE HUNDRED AND FIFTEEN HEAD.

Lot	Number	Shorthorn	Polled Durham	Red Polls	First Inoculation	Dose	econd Inoculation	Dose	Deaths	
									Fever	Black-leg
I	16	16	...	...	Dec. 6, 1899 ...	1cc	... ...	...	... ...	1
II	28	11	14	3	May 16, 1900...	1cc	... ...	....	4	1
III	28	6	5	17	Nov. 3, 1900....	1cc	Feb. 28, 1901, 18 animals..	1cc	2	.....
IV	12	1	6	5	Nov. 12, 1900...	1cc	Feb. 28, 1901, 9 animals...	1cc	.....	.....
V	24	23	1	...	Dec. 6, 1900 ...	1cc	Feb. 28, 1901, 23 animals..	1cc	3	.....
VI	7	7	....	..	Dec. 24, 1900 ..	1cc	...		1	

Lot I consisted of sixteen shorthorns, about 1 year old. They were raised in Indiana. On December 6, 1899, each received 1 c. c. of blood from a cow on the ranch at Encinal, Texas. The next day the bunch was started for the Catarina ranch, a distance of thirty-five miles, where they arrived in good order in three days. They were turned into two 800-acre pastures, in which there had been but few native cattle recently.

March 12th, 1900.—During the month of January we noticed fever among bulls. The heifers were not affected to a conspicuous degree. They all recovered without medicines, though they have fallen off considerably in flesh. They have not had a great number of ticks on them yet. The grass has been quite good all season, but we have been feeding in addition a small amount of oats, bran and cotton meal.

May 4th.—There has not been a great number of ticks on the cattle yet.

June 13th.—No deaths from fever yet.

July 4th.—The calves are carrying a great number of ticks. One of the heifers died of blackleg during the summer, otherwise there were no deaths from any cause. Some of the heifers grew exceptionally well, and were shown successfully at San Antonio Fair in October.

Lot II.—This lot consisted of nine shorthorn bulls, ten polled Durham bulls, three red poll bulls, two shorthorn heifers and four polled Durham heifers. They were raised in Ohio, Indiana and Illinois.

They were inoculated May 16th, 1900, at the ranch at Encinal. Each received 1 c. c. of blood.

May 28th.—The calves have had fever several days. They lie around most of the time, and do not eat with the usual relish.

June 9th.—We are feeding oats, bran and cotton seed meal. Twenty-three of the calves were hauled out to the Catarina ranch, thirty-five miles, where they were turned on ticky pastures and soon were swarming with ticks.

June 13th.—The calves have all passed through the first fever, and have fallen off in flesh but little. They are now beginning to show second attack.

June 17th—One bull and one heifer have just died in the second fever at Encinal.

June 21st.—One small roan heifer, No. 1, and a polled Durham heifer, No. 4, have died at the Catarina ranch. The roan heifer became very weak from fever, bogged down in water tank and was drowned. Heifer No. 4 had a very severe attack of fever. She showed delirium, trembling, large dilated eyes, and when some effort was made to drive her to the barn lot she seemed blind and unable to recognize familiar objects. She fell and expired immediately within fifty steps from where she started. Most of the bulls are having the second fever, but no deaths have occurred yet.

July 16th.—The calves at Encinal are now doing pretty well.

July 11th.—There is considerable fever among those at Catarina ranch, but no deaths to report.

July 28th.—The fever has stopped, and the calves are lively.

August 8th.—There are a great many ticks on the calves, but no signs of fever from them. The grass has freshened up recently, and the weather is cooler than usual at this season.

September 7th.—The calves are doing fairly well.

Lot III.—This lot consisted of twenty-eight animals. There were six shorthorns, seventeen red polls and five polled Durhams, all about 1 year old. They were raised in Iowa, Illinois and Indiana. They had been shipped South and arrived at Encinal October 23rd, 1900. On November 3rd each received 1 c. c. of blood from a 3-year-old cow.

Primary fever appeared promptly on the eighth day after inoculation, the majority running from 104 to 106.2 in the mornings. There was marked loss of appetite, but none refused food entirely. Their diet consisted of bran, oats and sorghum hay. A well marked secondary reaction occurred in all these animals at the usual time. One of the polled Durham bulls showed a primary fever from the twelfth to the twentieth day, a secondary from the twenty-fourth to twenty-eighth day, a third from the thirty-sixth to the forty-fifth day, and a fourth from the fifty-fourth to fifty-sixth day. This animal was not of a strong constitution, and seemed too weak to suppress the disease in his blood. He remained thin in flesh for months. The entire lot ate considerable quantities of dirt during fever stages. Red poll heifer No. 11 was especially bad in this respect, and seemed to have swallowed enough to produce clogging of the bowels. She refused all food. Linseed oil was given in quart doses, and half gallon doses of gruel, but nothing came through the bowels. She finally became very weak and died on the forty-third day. A post-mortem examination revealed the fourth stomach full of sand, obstructing the pylorus. Shorthorn bull No. 1 also died. His secondary fever began on the thirty-third day, and contiued to the fifty-fourth day. He became so weak that bloating occurred, which yielded to oils and stimulants at first, but finally became unmanageable, and death occurred on the fifty-seventh day, three days after fever had fallen. The red poll bulls were turned on tick-infested grounds in the early part of January, 1901. The remainder were not exposed to ticks until about the end of March.

February 28th.—All the bunch except the red poll bulls got a second inoculation by Rule of 1 c. c. blood from a 3-year-old Texas bull. No marked signs of fever were observed up to end of March. Their ration was oats and bran, with sorghum hay, and a few hours' run daily in December, January and February on winter oats. All were turned loose on tick infested pasture at the end of March. Grass was very dry, and up to the end of August all had some grain daily.

August 21st.—Four of the red poll bulls have shown no sign of fever. Two others in April and one in June had sharp attacks. One fevered slightly in July. All are now thriving well, and have made good gains.

None of the red poll heifers have ever shown any sign of sickness. All are growing well.

Two shorthorn bulls had slight fever in April and June. Now doing well. Two of the polled Durham bulls had severe atack of fever in June, one of which still shows signs of it. The others are all doing well. One shorthorn heifer had slight fever in June, two others no signs. All doing well.

Lot IV.—Twelve animals, comprising three red poll bulls, five polled Durham bulls, one shorthorn bull, two red poll heifers and one polled Durham heifer, were almost all under 1 year old. They were bred in Indiana, Iowa and Ohio, and arrived at San Antonio on October 21st, 1900. They were exhibited all through the San Antonio Fair, arriving at Encinal November 4th and turned in with Lot III on same ground.

On November 12th they were inoculated by Rule with 1 c. c. each of blood from a 5 or 6-year-old Texas bull. All the bulls showed fever by the eighth day, all the heifers by the tenth day. Secondary reaction was evident on all from the twenty-third to forty-third day. This bunch all did well except No. 14. They continued to grow well, and during fever spells lost but little flesh. Bull No. 14 had severe protracted fever from the twenty-seventh to the forty-seventh day, and fell away much. His falling off was still more aggravated from the fifty-first to fifty-sixth day by an acute case of foul foot. This lot was fed a similar ration to Lot III, namely, oats, bran and sorghum hay, with a few hours' run daily on green oats.

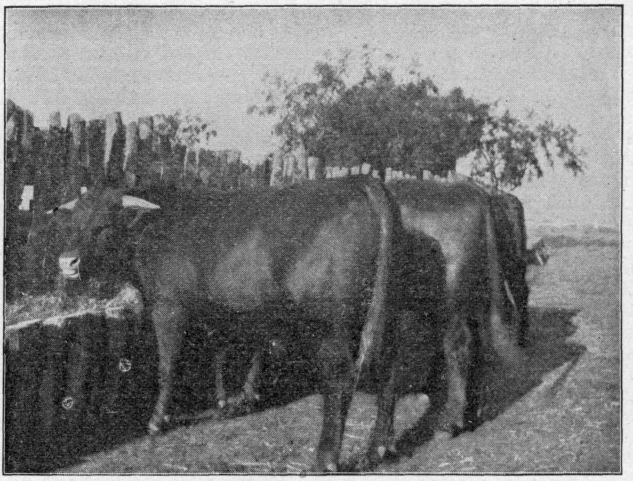
February 28th.—With the exception of three red poll bulls, all were inoculated a second time on this date with 1 c. c. each of blood from a 3-year-old Texas bull. No visible signs of fever from second inoculation appeared up to end of March. The three red poll bulls were turned out with those of lot 3 about the beginning of the year, and, although on ticky ground, did not pick up many ticks and continued to thrive well. All were turned on infested pasture in the end of March.

Lot V.—This lot consisted of twenty-four calves from 10 to 12 months old. Among them were thirty shorthorn heifers and one shorthorn bull bred in Canada, two shorthorn bulls bred in Missouri, and one polled Durham heifer from Indiana. They arrived at Encinal on November 26th, 1900, after eleven days on the cars, but were in good shape and lively. They were mixed in with Lots III. and IV. on exactly the same conditions, and on December 6th were inoculated by Rule with 1 c. c. each of blood from an aged Texas steer. All showed a primary fever from the seventh day till the twenty-fourth day after inoculation. Unlike Lots III. and IV. they did not show much evidence of a secondary fever, except in two or three cases. Heifer No. 12 on the fifty-sixth day after inoculation accidently got a severe case of impaction, and suffocated before relief could be given. The rest of the bunch, under exactly similar circumstances and rations as Lots III. and IV., did exceptionally well, and eight of them were shown very successfully at Fort Worth show in February, 1901.

February 28th.—On this date all of them got a second inoculation of 1 c. c. each of blood from a 3-year-old Texas bull, but no marked signs of fever appeared from this inoculation up to the end of March, except in the cases of heifer No. 19 and bulls Nos. 1 and 2.

August 21st.—Heifer No. 16 died of fever on April 5th. Four others fevered slightly, and the balance very severely in April. The latter lost much flesh, but with a liberal grain ration made good growth, and all are now in good condition. The polled Durham heifer had no more fever, and made fine growth. Bull No. 2 died of fever April 6th. Bull No. 20 had some fever in April and May, and also from August 1st to 10th. He has had very few ticks, being kept off ticky ground, and is now in good condition.

Lot VI.—This lot consisted of seven shorthorn bull calves 9 to 16 months old. They were bred in Illinois, Kentucky and Indiana, and exhibited at the Chicago Internaitonal Live Stock Show on December 6, 1900. They arrived in good shape at Encinal on December 20th, and on December 24th were each inoculated by Rule with 1 c. c. of blood from a 3-year-old Texas bull.



SHORT HORN BULLS INOCULATED FOR J. F. GREEN & CO., AT ENCINAL, TEXAS. NOW ON THE KING RANCH

An interesting feature in this experiment was the irregularity in the appearance of the primary reaction. In bull No. 5 it appeared on the sixth day, on bulls 6 and 7 on the seventh day, bull No. 3 on the eighth day, bull No. 4 on the ninth day, and bull No. 2 on the thirteenth day after inoculation.

It will be observed that the fever occurred earlier in the older bulls than in the younger. The secondary fever was well marked in all save bull No. 7. The case of bull 5 is interesting, in that he showed three distinct reactions and died at the close of the third reaction. A post-mortem examination suggested tuberculosis complication Bulls Nos. 1 and 2 had aggravated cases of foul foot, which made higher temperatures for the time.

This lot was fed and cared for exactly the same as lots 3, 4 and 5, but did not get a second inoculation, as fever occurred amongst them intermittingly all through February, and they were very much given to sand eating. All were exposed to ticks April 1st, 1901.

August 21st.—Bull No. 6 had some fever in June. Bulls Nos. 1 and 7, no signs of sickness, and all three now doing well. Bull No. 1 has had very few ticks.

The foregoing remarks on six different lots of calves refer to all the animals composing them up to end of March, 1900, and also to all except six bulls up to end of August, 1901. Since April, with said exception, they have almost all been ticky, sometimes to a great extent, and never at any time clear of ticks. Owing to dry weather and shortness of grass all have had grain daily, and almost without exception have made good growth and gain in weight.

Referring to the other six bulls, they were Nos. 3, 14 and 2 from lots 3, 4 and 5, respectively, and Nos. 2, 3 and 4 from lot 6. They were shipped from Encinal, LaSalle county, to the [illegible] ranch, Nueces county, on April 1st, 1901, on which day their [illegible]sure to ticks began. The first three bulls had a second inoculation on February 28th and up to April 1st all three had reactions from it. In the case of Nos. 3 and 14, the fever did not exist over forty-eight hours, but in the case of No. 2 it dragged out over twelve days, and was fairly severe. By referring to his fever record for the first inoculation, it will be seen that his reactions then were not very well marked. The last three bulls did not have a second inoculation. Twenty days after tick exposure No. 14 showed a fever of four days. About thirty-five days after exposure all the others had shown some fever, the reactions lasting from twenty-four hours to one week. From then until end of September one or two cases of mild fever showed up amongst them, and the whole six did very well. They were fed oats and bran, with oat fodder and green alfalfa, and they kept on growing all the time, gaining on an average two to three pounds per day.

On June 1, five or six months after inoculation, they were put in service, and were then in first-class breeding condition.

Hallum. Eight Shorthorns.

This lot of Iowa and Missouri bred calves consisted of seven heifers and one bull. All were about ten months of age, and ranged in weight from 590 to 575 pounds. Six of the heifers were inoculated February 6, and the remaining two on February 12, with 1 c. c. of blood from the same supply animal.

They were fed oats, bran, corn-chops and prairie hay in liberal quantities. This lot is of special interest, because they showed the greatest variation in individual susceptibility to Texas fever.

Heifer No. 1 had primary fever on sixteenth and seventeenths days, and secondary the thirty-second and thirty-third days.

Heifer No. 2 showed primary fever from the eighth to fifteenth days, and secondary from forty-first to forty-fifth days.

Heifer No. 3 had primary fever from twelfth to seventeenth days, and secondary on thirty-first and thirty-second days.

Heifer No. 4 had primary fever from ninth to nineteenth days, and secondary from twenty-sixth to twenty-ninth days.

Heifer No. 5, no primary or secondary fever. The only high temperature detected was 103, on the forty-first day. On the forty-eighth day a second dose of blood was given this heifer, which produced no fever during the thirteen days she was under observation at the Station. After shipping this heifer to the ranch in Brown county, she had a severe attack of fever from ticks in June. Fever appeared June 13th, 103.4; 14th, 105.3; 16th, 106.6; 17th, 104; 18th, 101.4. The heifer became very thin after the fever left, but slowly recovered.

Heifer No. 6 had high primary fever, lasting nine days, and no secondary reaction above 103.6, and even this not on consecutive days.

Heifer No. 7 had primary fever lasting seventeen days, during which she continued to eat well, and did not appear sick, and actually gained in weight. The secondary was mild and lasted four days.

Bull No. 8.—This bull was long bodied and had primary fever nine days. He lost flesh, ate but little, and became very weak. For five days his temperature was sub-normal. His secondary fever was mild and lasted four days.

After being at the Station sixty-nine days they gained in weight as follows. No. 1, sixty-seven pounds; No. 2, seventy-five pounds; No. 3, eighty pounds; No. 4, sixty pounds; No. 5, 105 pounds; No. 6, 120 pounds. All were sent to Brown county, Texas, April 15th, since which time no sickness has occurred, except the relapse in No. 5, already mentioned.

SHORT HORN HEIFERS DURING TREATMENT AT THE STATION. NO DEATHS. NOW IN BROWN COUNTY.

HAMILTON. FOUR HEREFORD BULLS.

These four Missouri bred bulls were at the time of inoculation about 16 months of age. They were in good flesh and apparently healthy. They were inoculated December 19th, 1899, at the owner's place at Cuero, Texas. By January 10th the two oldest calves had shown some fever, one of which passed red urine. On January 19th all were given a second dose of 1 c. c. of blood. This was followed by fever in one of the younger calves, which began two days later, and ran to 106, and continued three days. He was given a large dose of salts, which operated freely. For several days he refused all grain and green feed.

The other small bull was given a third dose of blood some weeks later. The four were sent to the ranch about the middle of March and took on ticks, which did not seem to cause any sickness. One of them died some time after from other causes. From this on the bulls have done well.

HARRISON. TWO SHORTHORN BULLS.

A two months' old bull calf received 1 c. c. of blood direct from the jugular vein of the nurse cow on February 14, 1901. No pro-

nounced fever occurred except an occasional temperature of 103 for one day only. A few ticks were carried during March, which did not affect the calf to any conspicuous degree. During May quite a considerable number of ticks were carried without apparent effect. During June and July a well marked fever spell occurred, with a temperature of 105. He recovered promptly.

Bull No. 2 was about 11 months of age at the time of inoculation, March 16th, 1901. A primary fever was well marked from the seventh to eleventh days, and a second fever from nineteeth to twenty-first days, a third from twenty-eight to thirty-first days, a fourth from fortieth to forty-sixth day, a fifth from the fifty-sixth to fifty-ninth day. The calf was a good feeder, and continued to grow. He has since been out all summer, and has shown no further signs of sickness.

HERNSTADT. TWO HEREFORD BULLS.

Bull M, aged 11 months, was inoculated at the Station December 31st, 1900, with 1 c. c. of blood.

The primary reaction began on the ninth day and continued four days. Second fever very feeble. We found 103.6 on the twenty-fifth day, and 103.5 on the forty-sixth day. No further fever.

February 21st.—Gave a second inoculation with blood from which no reaction occurred during the twenty-three days following. This bull gained in flesh, and during his stay of eighty-five days at the Station, and gained 130 pounds. He was a plain, grass fed bull, whose stomach had not been ruined by high feeding. It will be observed that no reaction occurred from the second dose of blood, yet this bull fevered severely on exposure to ticks.

March 16th.—Shipped the bull to Limestone county.

March 25th.—No ticks on the bull. We feed bran, chops and rye straw.

April 12th.—The bull M is quite ticky. He runs in the pasture.

April 13th.—Found bull sick, with high temperature—106. Gave large dose of salts and kept the bull in the barn. Used cold water on the back and by injection.

April 20th.—Bull M has survived the fever.

June 12th.—The bull is quite ticky, and shows no further signs of fever. He has lost flesh, and is not doing so well as we would desire.

Bull G, a 10 months' old Hereford, was received at the Station February 17th, 1901.

February 21st he received 1 c. c. of blood.

Primary fever was very severe, 107 degrees on the seventh day and continued somewhat lower for five days. Red urine set in, but the calf recovered. The secondary fever was milder, and occurred from the thirty-eighth to forty-third days. This calf fell off in flesh, refused to eat much, and was shipped to Limestone county April 19th in bad condition.

May 8th.—Bull G has had high fever two days. He does not care to eat anything except a few mouthfuls of grass, and then lies down. Drinks very little. Gave him salts, which acted freely, and cold water injections. He survived the attack.

June 12th.—The bull is very ticky. He is thin and not making satisfactory growth. He has not been fed any grain.

August 17th.—Bulls M and G are ticky and show no further signs of fever. They are thin in flesh, but hearty.

REMARKS.—This experiment is a very interesting one, in that one

bull fevered mildly from the first inoculation and was apparently immune to the second.

The other calf fevered very severely from inoculation, and passed red urine. It would seem that their systems must be radically different in resisting power. Yet when exposed to ticks both fevered severely and both recovered. The question naturally arises as to what degree of fever produces immunity. Evidently we know very little about it.

HILL. FIFTEEN SHORTHORNS.

This lot consisted of ten heifers and one bull. They were young cattle about 12 to 14 months of age, and had been bred in Missouri.

April 12, 1900.—Each received 1 c. c. blood. The same blood as was used in the Rhea lot (to be described). These calves did quite well after inoculation. Five or six were off feed and moped around several days, but recovered. No red urine was observed.

November 18th.—During the summer one died of blackleg. Otherwise the entire lot made a satisfactory growth.

HOLLINSWORTH. ONE SHORTHORN BULL.

This bull, at the time of inoculation, was 11 months of age, and weighed 750 pounds. He was received by express from Indiana, and after a few days' rest was given 1 c. c. of blood, January 25th, 1901.

The primary reaction appeared on the fourth day, with a morning temperature of 106. This continued with slight variation seven days. The bull was in good flesh, and by careful feeding we were able to hold his appetite. A brisk cathartic was given, which flushed the whole bowel. He recovered promptly and no well defined second reaction was detected. A 2 c. c. dose of blood was given March 18th, but no temperature reaction followed while at the Station. The bull was shipped to the ranch in Uvalde county April 13th. He had gained 125 pounds while under treatment. Since then he has done well. We have not detected any fever above 103.5.

HOVENKAMP. TWENTY-SEVEN HEREFORDS.

This lot consisted of twenty-seven calves from 6 to 10 months of age. They were raised in the Panhandle country, and were somewhat wild and thin in flesh. They were brought to Fort Worth and inoculated December 18th, 1900, with 1 c. c. blood each. These calves were sent to the farm immediately after inoculation, and grazed on green oats. By January 8th it was evident from their appearance that the disease was affecting them, though no effort was made to ascertain their temperature with a thermometer. By March 8th all had recovered from the second fever, which reduced them in flesh somewhat.

They carried ticks all spring and in May were quite ticky, but no serious sickness. It is very plain that the inoculation fevers have stopped their growth temporarily.

By October no deaths had occurred, and the calves were in good condition.

December 18th.—These calves have made a very satisfactory growth.

HOWELL BROS. TWENTY-THREE RED POLLS.

This lot consisted of twenty heifers and three bulls. They were

all bred in Wisconsin and reached the Station December 1st, 1900. Their ages ranged from 8 to 21 months. Each one received 1 c. c. of blood December 4th. The primary fever appeared from the sixth to the tenth day, and but one passed red urine. One small heifer had no primary fever, except 103.7 on the ninth day. The whole bunch was fed on oats, bran and chops, prairie and Johnson grass hays. Nothing of special interest occurred during the fever stage.

The secondary fever was well marked in all, and more severe than the primary. In one heifer it did not begin until the forty-third day after inoculation.

After fifty-seven days they were weighed, and it was found that seven had lost flesh. One had lost as much as seventy-five pounds. The remaining sixteen had gained in weight. The largest gain was ninety pounds.

On January 30th the whole bunch was sent to the farm, where they have remained since. They all recovered promptly after inoculation, and have done well, except one heifer, which remained thin in flesh all summer. She finally died in August, after a relapse of tick fever. The whole lot was given a second dose of blood April 3rd. No conspicuous fever resulted from this. Most of the animals had some fever when ticks became numerous. We gave a brisk cathartic, kept then in the shade until the attack passed off, and turned them out again as before. With the exception of the heifer that died, they have made satisfactory growth, and most of the heifers will have calves in the winter and early spring. One bull and one heifer had attacks of fever in November, but recovered.

HUNT. TWELVE SHORTHORNS.

Lot I consisted of four Kentucky bred heifers, whose ages ranged from 9 to 13 months. Each was given 1 c. c. of blood from the jugular vein of a Texas cow on January 19th, 1900.

Heifer No. 1 began to show fever on the sixth day, which continued high eight days. Fever was shown on the sixteenth, nineteenth and twentieth days. The secondary reaction began on the thirty-eighth day, and continued sixteen days.

Heifer No. 2 began to have fever on the fifth day after inoculation, which continued nine days. She showed mild fever on the nineteenth, twenty-ninth and thirtieth days. The regular secondary fever began on the thirty-eighth day, and continued high eight days. We found fever one day only, on the fifty-fourth day.

Heifer No. 3.—The primary fever began on the sixth day and continued four days. We found fever also on the nineteenth, twentieth and twenty-third days. From this no fever was observed until the forty-first day, when the regular secondary reaction began, and continued five days. Fever was also observed on the fifty-third and fifty-fifth days.

Heifer No. 4 was a model of the beef type. She was 13 months old and in good flesh. She showed primary fever for three days, beginning on the sixth day after inoculation. She recovered promptly, and showed mild fever on the thirteenth and nineteenth and fortieth days. No prolonged secondary fever was observed.

These cattle were well fed on bran, chops and cotton seed meal, with sorghum hay. Nos. 1, 2 and 3 became thin in flesh, and showed very plainly the emaciation, and the dry, dead condition of the hair that they were having Texas fever. No. 4 remained in good flesh, and was apparently not affected by it.

Attention is here called to the variation in susceptibility in different individuals. The vigorous animal that has learned to thrive on grain and hay, is often able to keep the disease in its blood in check,

while calves recently weaned are very apt to become thin, weak and stunted.

Heifer No. 4 was given a second dose of blood by Dr. Folsetter on April 5th. This produced a mild reaction from the eleventh to the fifteenth day following, but no secondary was observed.

After the effects of inoculation had passed off, the calves were put out in a pasture in Dallas county, and during the summer were fed some bran when the grass became short. No effort was made to destroy the ticks, which were not very numerous at any time. In December heifer No. 3 developed an acute attack of Texas fever, and died from it. She had then been in Dallas county more than one year.

Lot II.—Consisted of two heifers and five bulls. Their ages ranged from 6 to 15 months. Each one was given 1 c. c. of blood sub-cutaneously December 3rd, 1900.

The fever appeared promptly in all of the calves at the usual time. One of the bulls fevered much milder than the other, and showed a mild secondary fever. He remained in good flesh and showed very little or no effects from the inoculation. Eighteen days after sending him home he had a severe spell of Texas fever and died. The others all lost flesh, and the younger ones looked very bad. They became poor, weak and the hair became dead. They gradually improved, and all but one have done well since. This one was given a nurse cow. The fresh milk helped him very much. He began to grow, and did very well for two months. May 16th he was put in a ticky pasture. No bad effects were found until May 28th, when he had high fever, which lasted six days. After three days of normal temperature a relapse occurred, in which the urine became bloody, and in two days more he died.

Another calf was a 5-months-old bull calf, which was received at the Station by express from Kentucky. February 10th, 1900, he was given 1 c. c. of blood. Primary fever appeared on the eleventh day, and continued eight days. This calf was given a good cow to suck and was well fed. He continued to grow and did very very well. Attention is called to the great difference in weaned and unweaned calves. The former often do very badly, while the latter often do well. The resistance to disease seems to depend very largely on the nutrition of the body. We have not found a way of feeding that will compare with a nurse cow. No more violent spells occured among these cattle during the summer, though we often find an animal with 103 in the morning and from 105 to 106 in the evenings. No fever on consecutive days was observed.

HUNTER. THIRTY-SIX RED POLLS.

Lot I.—Consisted of seventeen Iowa bred heifers that were sold at Fort Worth December 5, 1900, and were taken from there to Marlin, Falls county, Texas. They were in fair flesh and apparently healthy. They were immediately put in a large field in the Brazos bottom on which there was considerable volunteer oats. The calves were somewhat wild and difficult to get in the stock pens when we were ready to inoculate them.

They showed rapid breathing and high temperature, which was attributed to the excitement incident to inoculation. This proved to be a serious blunder, as we found later on, to our astonishment, that the cattle had in some unknown manner become ticky.

In two or three days several were very sick with fever, and by the 28th five had died of Texas fever. Post-mortem showed the typical lesions of the disease. Those that were sick would lie around, refuse to eat or drink, had high fever, great emaciation, uncertain gait and a peculiar staring of the eyes.

By January 6th two more had died, making seven in all out of seventeen.

By January 7th (about thirty days since the cattle were brought) mature ticks in large numbers were noticed on all of the remaining ten. It is very probable that these cattle became infested in the cars or stock pens before their arrival at the farm, as they were immediately sent to "the bottom" after unloading. Attention is called to the danger from these sources. By January 23rd all but one were entirely over the fever, but all of them were greatly reduced in flesh and looked bad.

By February 1st the whole bunch was much improved, and there has been no further trouble with them.

Lot II consisted of eight calves 2 to 6 months of age, whose mothers were not immune, and it seemed desirable to infect them during the winter so that they could be turned out with some degree of safety. Each was given 1 c. c. of blood December 28th, 1900. By January 6th all had shown fever but one, and were doing well. They recovered from this and began the secondary fever the 23rd. This was more severe than the primary one, and caused more loss of flesh. Two of the smallest ones had a very troublesome diarrhœa. The others recovered by February 1st. For the diarrhœa we gave *tanniform* in 40 grain doses twice a day. We tried whisky, Tr. nux vomica, pepsin and sub-nitrate of bismuth, but in spite of all these one calf finally died of exhaustion, and the other survived, though poor and weak.

Lot III consisted of three heifers and eight bulls. They were given 1 c. c. of blood each on February 22nd, 1901. Fever appeared the usual time.

Bull 73.—The fever appeared suddenly on the sixth day, temperature 107.5; seventh day, 106; eighth day, 106.2; ninth day, 107.7; passed red urine and died about 4 p. m.

Bull 16.—Primary fever appeared on the eighth day at 103.5, which increased to 105.6 by the eleventh day; red urine developed. Twelfth day the temperature had fallen to 100.4, but this bull died at 10 a. m.

Heifer No. 90.—Primary fever very abrupt. We found it 108.2 on the morning of the sixth day; seventh day, 106.6; eighth day, 106; ninth day, 107.2; tenth day, 105.8; eleventh day, 102.7. From this until the twenty-first day the temperature was normal.

The secondary fever began on the twenty-first day, 104.6; twenty-second day, 105.7, gave salts; twenty-third day, 106, gave salts again; twenty-fourth day, 105.8; twenty-fifth day, 104; twenty-sixth day, 101.4.

The fever passed away, and the heifer was doing very well until a tertiary reaction occurred, which began on the forty-first day, 105; forty-second day, 104.7; forty-third day, 103.2; forty-fourth day, 98.2, and a vacant stare from the widely dilated eyes. This heifer died the same day. Attention is called to the three distinct reactions, each milder than the preceding, and yet death occurred at the close of the third.

This lot was handled with some eleven others, and were fed altogether, but no deaths occurred among the others.

All were fed all they would eat of oats, bran, corn chops and prairie hay. They remained at the Station eighty-three days, and by that time gained in flesh and looked well. They were sent to the ranch in Falls county April 16th, where they have carried ticks all summer. They have not been fed any grain all summer, and have shown no signs of fever, though they have been running with the cows and have fallen off some in flesh.

Ikard. Sixteen Herefords.

This experiment differs from the others, in that fifteen of the

animals were young suckling calves whose mothers were not immune. The other animal was a yearling bull. All were in Clay county, Texas. April 14th, 1900, each received 1 c. c. of blood. No conspicuous result could even be noticed among the young calves. The bull fevered severely from inoculation, which proved that the blood used on the calves was virulent. After getting over the inoculation fever we turned him out with the cows, and he took on a crop of ticks. These produced a sharp fever June 1st, which went above 106. He recovered from it, however, and after a few weeks' feeding was turned out again. November 15th the bull has showed no more signs of fever, and there has been no loss or sickness among the calves.

JENNINGS. THIRTY-FOUR RED POLLS.

Lot I consisted of eight heifers and one bull. Their ages at the time of inoculation, January 27th, 1900, ranged from 10 to 22 months. A standard dose of 1 c. c. of blood was given each. Primary fever was very severe in two animals, mild in three, very feeble in four.

The secondary fever was well marked in the whole lot. One case is of interest, in that the fever did not appear until the thirty-sixth day after inoculation. The whole group fell off in flesh during the second fever; some refused to eat anything for several days, and others licked much dirt. No red urine was observed.

They recovered promptly after the fever, and after sixty-four days had gained considerably in weight. The bull neither gained nor lost. The gains in the heifers ranged from forty to 100 pounds. They were shipped to the ranch in Caldwell county March 27th, 1900.

April 13th.—Bertha, the heifer mentioned as having no primary fever, was found sick, with very high fever (108). Gave her a large dose of salts, which acted during the following night. Fever remained very high three days, but fell gradually after the salts had acted well. Urine remained clear.

By the 19th the fever had ceased, bowels and kidneys were acting well and she had returned to her food. Four or five others showed some fever on exposure to ticks, but nothing very severe. From this on no further trouble occurred.

Lot II consisted of twenty-four heifers and one bull. All were from Wisconsin, and had arrived in the State about October 15th, and were given 1 c. c. of blood each on November 25th. Attention is called to the length of time between arrival in infected territory and time of inoculation, because the danger of infection by ticks is very great. This makes the inoculation a very dangerous proceeding for the calf. After the inoculations were made, it was discovered that the calves were ticky. It was impossible then to undo the matter. The next day after inoculation nine of the calves have fever ranging from 103.3 to 106. The third day four more had high fever, making thirteen in all. On the fourth day two more fevered. The fever became acute in twenty-one of the number. Medicines were given, but one calf died on the seventh day after inoculation, another on the eighth day, another on the fifteenth day, and a fourth on the eighteenth day.

An interesting feature observed in those which fevered so soon after inoculation was the absence of a well defined secondary reaction. Almost all showed an occasional high temperature, but no period covering several consecutive days was observed.

No further trouble occurred among these cattle during the summer. One heifer dropped a good calf in July, and both have done well since.

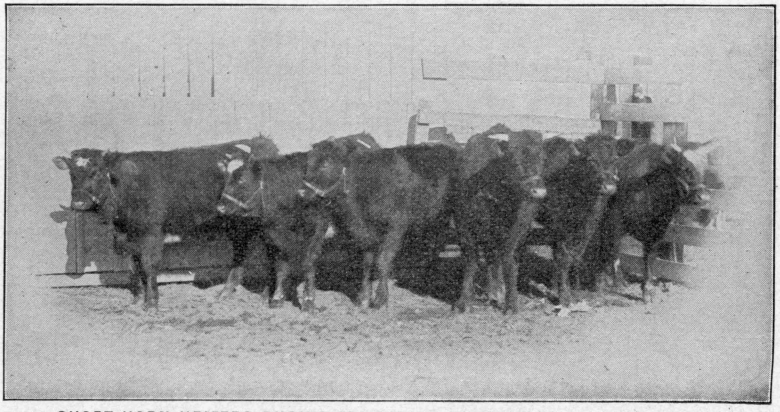
KENEDY PASTURE CO. FIFTY-SEVEN SHORTHORNS.

This lot consisted of ten heifers and forty-seven bulls. Their ages varied from 6 to 18 months. All had been raised in Missouri and Kansas. They were shipped South and arrived at the Station grounds December 9th, 1899.

They were divided into three lots. Lot I consisted of the ten heifers. The oldest ones were 12 months and the youngest 8 months.

Lot II consisted of twenty-eight bulls. This includes the youngest ones, which were about six months old, and the most of medium sized ones.

Lot III consisted of nineteen of the older bulls. All were fed oats, corn chops, bran and prairie hay. December 23rd Lots I and II and seven of Lot III were inoculated with 1 c. c. of blood. The fever resulting from this presented the greatest variation. For instance, bull 25, a 7 months' calf and having a weight of 455 pounds, showed a temperature of 107.4 on the third day after inoculation. This calf was of a delicate constitution, and had not learned to thrive on a grain and hay ration. This fever continued three days, then reap-



SHORT HORN HEIFERS DURING TREATMENT AT THE STATION. NO DEATHS. NOW ON LA PARRA RANCH IN CAMERON COUNTY.

peared on the eleventh day and continued higher until the twenty-third day. After six days of normal temperature the fever appeared the *third* time on the thirty-ninth day, and continued until the fifty-fifth day. A *fourth* fever period began on the seventy-first day and continued until the eighty-seventh day. This calf became thin and weak, and showed a peculiar staring of the eyes, due probably to the blood becoming so thin as to make vision imperfect. This calf was exposed to ticks March 13th, and died. A post-mortem showed a badly diseased condition of the lungs (tubercle?). This case is noticed, because four reactions are very unusual. We have had a number of cases of three well defined reactions, but the typical number is two. It will be seen further on that there may be but one well defined reaction.

The majority of the animals of Lot II fevered very lightly. Even by the twenty-ninth day only seven had fevered to any considerable degree. At that time all but the seven mentioned were given a second dose of 1 c. c. of blood. This produced a very acute spell of fever, from which one bull (No. 21) fevered on the twelfth day, passed red urine and died on the sixteenth day after the second dose.

These remarks are made in detail to show that, even though the primary fever be very mild, a second dose may be dangerous if made just before the second fever is due.

Lot III consisted of nineteen bulls. The smallest one weighed 700 and the largest 1135 pounds. Each received 1 c. c. of blood January 8th, 1900. The primary fever was more uniform in this lot. The secondary fever appeared about the usual time. No deaths occurred from inoculation in this lot. All lost some flesh and appeared empty. Bull 47 was noticed down on January 30th. When approached he arose, moved as if frightened, had that peculiar dilated eye due to imperfect vision, would not follow the herd, fever had fallen to 100.6, urine clear. Gave a large dose of salts. The next morning we noticed that he had eaten some. The action of the salts was vigorous and successful. None of the others were so severely affected.

The fifty-six remaining animals were sent to the La Parra ranch March 24th. They at once became infested with ticks. Heifer No. 10 passed bloody urine April 10th, but recovered. A considerable number of the bulls fevered severely. Grease was applied to ward off as many ticks as possible. We find adult ticks on them daily, and a great many young ones. Most of the animals took to eating dirt during the fever spells. It is quite hard to keep them from it. Bulls 35, 27 and 26 have all passed red urine, and have died. On post-mortem examination we find the stomach full of sand.

May 23rd. 1900.—The cattle are doing better now. There were no deaths among the heifers, though one passed red urine.

We lost nine bulls in all. One from inoculation fever at the Station and eight from fever from ticks. It is somewhat interesting to note that all the deaths, save one, were among the younger bulls that had been inoculated twice. They seem to lack the ability to suppres the disease which the more vigorous animals possess.

June 10th, 1900.—The cattle are doing fairly well. They carry many ticks but no fever.

July 27th.—The cattle are doing well. No fever. Lots of ticks.

October 15th.—The cattle are doing well. We have the bulls at work. The older bulls, say those 16 to 18 months of age, have stood the fever and climate much better than those 5 to 8 months of age.

LANDA CATTLE CO. FIFTY-NINE HEAD.

This lot consisted of thirty-two red polls, twelve poll Durhams and fifteen shorthorns. They were bred in Missouri and Iowa, and reached the Station grounds February 22, 1901.

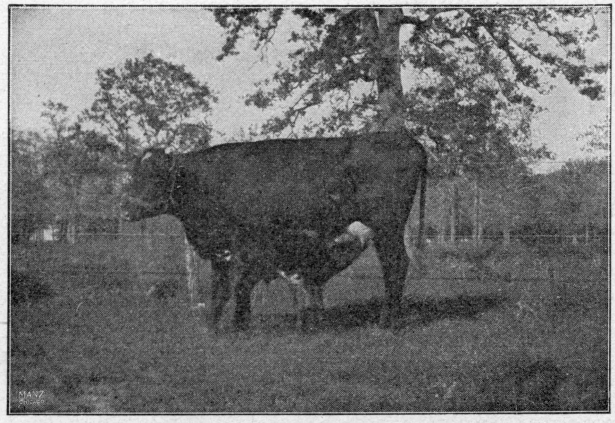
Ten of them were bulls. These were given 1 c. c. of blood each on March 9th. The primary fever appeared promptly from the eighth to the eleventh days, and ranged from 104 to 106.4. The bulls were well fed on oats, corn chops and bran and prairie hay, and held up well in flesh. Two of the smallest ones were given nurse cows. During the fever stages we gave salts to keep their bowels open. The secondary fever began from the twenty-seventh to thirtieth days and continued seven to nine days. This caused a great loss of flesh and deadening of the hair. No deaths occurred. A well defined third reaction occurred in four of them. It was much milder than the preceding fevers.

On May 23rd, the seventy-sixth day after inoculation, a second dose of 1 c. c. of blood was given. This caused a reaction in three of them. Bull 9 was 105.6 on the morning of the fourteenth day after the second dose, and 108.4 at 6 p. m. of the same day. We gave him injections of cold water, which reduced the temperature to 104 by midnight. The next morning he was 103, and remained normal afterwards. He became very empty and lost flesh, and looked bad for weeks afterwards. No deaths or serious fever has occurred among them since.

The remaining forty-nine animals were heifers. Thirty were Red Polls, six were poll Durhams and thirteen were shorthorns. They ranged from 8 to 24 months of age, and seven or eight of the oldest ones were pregnant. They were given 1 c. c. of blood each on March 18th.

Primary fever appeared promptly at the usual time. In eleven of them it was mild, say 103 to 104 for one or two days. On the morning of the nineteenth day we found one large heifer dead in the pasture. She had fever nine days, but did not appear to be in a critical condition. On post-mortem examination the usual lesions of Texas fever were present, without red urine. The abdominal cavity contained two or three gallons of clotted blood. We searched the liver, spleen and other organs, but could not find the source of the hemorrhage.

The secondary reaction was well marked in all the heifers, and was almost simultaneous. It began about the thirtieth day and lasted from six to ten days. Three of them died at the close of the secondary fever. Four of the number had a mild tertiary reaction.



HEIFER NO. 40 AND HER CALF. THIS CALF WAS BORN IMMEDIATELY AFTER THE CLOSE OF THE FIRST FEVER. IT IS OF INTEREST BECAUSE THE CALF DID NOT BECOME INFECTED WHILE IN THE WOMB DURING THE SICKNESS OF ITS MOTHER. THE COW DIED IN THE SECOND FEVER.

One case is of special interest. Heifer No. 40 was about 20 months of age and pregnant. She had a good primary fever from the twefth to the sixteenth day. She recovered in good condition, and gave birth to a fully developed calf on the twenty-fifth day after inoculation at 10 p. m. An interesting question arose as to whether or not the blood of the calf had become infected from the mother. The next morning 5 c. c. of blood was drawn from the jugular vein of the calf directly into a hypodermic syringe, and this was immediately injected under the skin of a Northern cow which had recently been brought from Kertucky. It was supposed that the cow would become infected from this and have a well defined attack of Texas fever. For thirty-six days the temperature of the cow was noted carefully, but no reaction occurred.

To eliminate the possibility of the cow being immune to the disease we turned her into a ticky pasture, and on the forteenth day after her temperature was 103.9; fifteenth day, 104; sixteenth day, 104; seventeenth day, 107; eighteenth day, 106; nineteenth day, 105. She

survived the attack, but became poor and weak, and some six weeks later gave birth to a calf. From both causes she became too weak to rise and was killed.

From this we conclude that the germs of Texas fever do not pass from the mother to the blood of the calf in the womb. It is well known that no actual passage of the corpuscles of the blood occurs, but it did not seem impossible for some of the germs that are found free in the plasma of the blood to do so.

To return to the cow and the calf. The cow, No. 40, recovered from the birth of the calf in good shape, and five days later began to have the secondary fever from inoculation. On the sixth day the temperature was 105; seventh day, 104.6; eighth day, 106.2; ninth day, 103; tenth day, 98 degrees, and she died of collapse.

On the eighth day, when the cow was very sick with high fever (106.2) 1 c. c. of blood was drawn from her jugular vein and injected under the skin of her calf (now eight days old). This produced a well marked fever spell in the calf from the sixth to tenth days following. This shows that the calf was not immune, and that it contracted Texas fever from an injection of its mother's blood. Forty days later the calf became infested with ticks and had another attack of the disease.

The photograph shows the cow and her calf.

The remaining forty-five heifers were run on grass and fed well twice a day. They responded to feed in a satisfactory way, and gained in flesh and growth. On May 23rd, sixty-seven days after inoculation, a second dose of blood was given. This was followed eight days later by high fever in ten of them, seven of which passed red urine, and three died. The remainder recovered promptly and were shipped to Comal county June 27th. They were turned on pasture and became infested with ticks, which produced fever in ten of them, one of which died July 21st. Another pregnant heifer had a good calf July 31st.

In this lot of forty-nine heifers seven or eight were pregnant. These passed through the fever as well as those which were not pregnant, except No. 40 described above.

FORTY-NINE HEIFERS DURING TREATMENT AT THE STATION FOR LANDA CATTLE COMPANY. NOW IN COMAL COUNTY

LANIUS. SIXTEEN SHORTHORNS.

This lot of calves arrived at Bonham, Texas, from Iowa, December 30th, 1899. They were given 1 c. c. of blood each January 8, 1900. Fever appeared promptly, and by the 17th one heifer refused to eat. The next day two heifers refused food, and the bull was 107.4. The following night he died. January 19th the two heifers refused to eat. Gave large doses of salts and injections, but secured only small hard masses of fecal matter. January 20th both heifers died. The remaining thirteen are drowsy, lie around most of the time and don't care much about eating. We feed cotton seed and crushed oats.

February 23rd.—The calves have all passed the second fever successfully. They are now doing well.

August 16th.—The calves continue to do well. Two of them had a spell of fever in June from ticks, but recovered. They now have several hundred ticks on each.

January 11th, 1901.—There has been no more trouble with the calves. They carried ticks all last summer, and are now quite ticky.

LUCAS & KING. THREE HEREFORD BULLS.

These three bulls were raised near Midland, Texas, and were about 1 year old at the time of inoculation. Each one received 1 c. c. of blood February 21st, 1901. They were fed oats, bran, corn chops and prairie hay, and run on green oats one hour per day.

Bull 10 had primary fever on eleventh and twelfth days after inoculation. He passed red urine both days, but continued to eat. A pound dose of salts kept the bowels loose, and he recovered in good shape. His secondary fever began on the thirty-seventh day, and continued eleven days. After fifty-eight days at the Station he was shipped to Goliad county (April 20th). Three weeks later he was found dead in the pasture. Two days before he died he was apparently well. The cause of death was not ascertained, but it was probably due to Texas fever.

Bull 29 had primary fever ninth to thirteenth days after inoculation. On the eleventh day bloody urine was observed. The bull recovered in good shape, and had a secondary fever of nine days, which began on the forty-first day. He recovered in fair condition, and has done well since.

Bull 32—Primary fever from eighth to twelfth days; passed red urine on the eleventh and twelfth days. He refused to eat grain, but ate a few mouthfuls of green oats. We gave him one and one-half-pound dose of salts, which failed to go through the bowels. This was followed by a two and one-half-pound dose of salts the next day.

These flushed the bowels freely and brought away a large quantity of ginger-colored excrement. This seemed to relieve the system, and the bull resumed eating. The secondary fever began on the forty-fifth day, and continued seven days. Since recovery this bull and No. 29 have been on the ranch in Goliad county, and have done well.

MCGINNIS. SIX SHORTHORNS.

This lot of calves was shipped by express from Missouri to Terrell, Texas, December 20th, 1899. On the 29th each was given 1 c. c. of blood. Fever was quite noticeable on two of them by the tenth day. By January 22 the others had no conspicuous sickness. The calves continued to do well, and on March 17th a second dose of 1

c. c. was given each one. By March 31st no sickness was apparent from the second dose.

The calves continued to do well until June, when the smallest one died from fever on the 8th. The others fevered from ticks, and five of them stopped growing and became stunted. Though no more deaths occurred, the calves became thin, weak and did not make a satisfactory growth during the summer.

They remained thin the following winter, and by February, 1901, their hair was rough, dead and yellow, and their bowels are out of order much of the time. Only two have made a good growth, while all have been well fed for a year.

McFaddin & Wiess. Two Hereford Bulls.

These bulls were raised in Hartley county, Texas, and at the time of their arrival at the Station, January 29th, 1900, were 11 months old. February 5th each received 1 c. c. of blood. Primary fever was mild. The highest temperature was 103, on the morning of February 20th. The secondary fever was well marked. It began March 10th and continued high eight days. The bulls lost some flesh, ate quantities of dirt, lost the hair along the sides of the neck, and had the appearance of fevered cattle. They recovered quite promptly and were sent to the ranch in Jefferson county April 4th. They were turned out in pasture with Texas cattle and remained with them the whole summer. No fever was observed at any time, and both calves made good growth, and did considerable work among the cows.

Mayer. Twenty-two Herefords.

Lot I consisted of eight heifers and two bulls.

They arrived at the Station from Kansas and Missouri December 22nd, 1900, and were given 1 c. c. of blood each December 31st. All were fed oats, bran, corn chops and prairie hay.

Geraldine, heifer, age 11 months, weight when received 560 pounds. No fever at usual time of primary reaction, but 103.8 and 103 on the twenty-fourth and twenty-fifth days. Gave her a second dose of blood on the thirty-eighth day—no result. Gave her a third dose on the fifty-third day, which produced fever five days later, which lasted five days and ranged from 102.7 to 105.8. No second fever followed this. This heifer remained at the Station 116 days, and gained 165 pounds in weight.

Old Glory, heifer, weight 890, age unknown. This heifer was a model of the beef type. No fever followed first inoculation. Gave a second dose of blood on the thirty-eighth day—no result. Gave her a third dose on the fifty-third day. This produced fever from sixth to the tenth days following. On the eighth, ninth and tenth days she passed bloody urine. She recoverd promptly, and by the expiration of 116 days had gained 100 pounds in weight and remained in fair shape.

Cow Slip, a 7 months heifer that weighed 600 pounds. She was fat and very attractive. Primary fever very mild, 103 only on the eleventh day after inoculation. Gave a second dose on the thirty-eighth day, which produced fever three days, beginning on the fifty-ninth. This calf received a third dose on the 110th day, which produced a mild fever on the fourth and fifth days following. She gained 110 pounds in weight while at the Station, and was shipped in good condition.

Mazie Britain, age not known, weight 620 pounds. Primary fever very feeble; second dose on the thirty-eighth day. A feeble fever followed this on the seventh and eighth days.

Gave a third dose of blood on the fifty-third day, which caused fever on the eighty-fourth, eighty-fifth and eighty-sixth days, ranging from 104.4 to 106.2. This heifer recovered promptly, and at the expiration of 116 days had gained 140 pounds.

Miss Walnut, age 12 months, weight 790 pounds, primary fever of 104.4 on the eleventh day, and 103 on the twelfth day. No secondary was noticed.

A second inoculation was given on the fifty-third day, a third on the seventh-ninth day, a fourth on the 110th day, none of which produced fever. We found 104 degrees on the 106th day only. The heifer gained 120 pounds while at the Station, and has since done well.

Blush Rose, Ninth, a 15 months heifer, weight 770 pounds. Primary fever began on the twelfth day and lasted four days. Secondary fever feeble. This heifer showed but little fever, but appeared sick and indifferent about eating. She would lie about the lot for hours. A second dose was given on the seventy-eighth day, and a third one on the 110th day, which produced no visible effects. In 116 days she had gained ninety pounds.

Heifers Nos. 14 and 15, age unknown, weight 495 pounds each, fair flesh only. They were quite lousy and somewhat wild.

Primary fever could not be detected in either. Gave both a second dose on the twenty-fifth day which produced no effect. A third dose was given on the fifty-third day which caused No. 14 to have fever from the sixty-second to sixty-sixth days, and No. 15 very high fever four days running to 107, and red urine.

Both recovered promptly and No. 14 made the remarkable gain in weight of 303 pounds. No. 15 gained 193 pounds, the latter being the one to have red urine.

Bull 103, *Ruben*, age 14 months, weight 990 pounds, primary fever well marked from seventh to fourteenth days. Second fever scattering. We noticed 103.2 on the thirty-sixth day and several times from 103 to 104 for two or three days at a time. Second inoculation on the seventy-eighth day which produced no visible effect, and a third inoculation on the 110th day with similar result. The bull appeared somewhat gaunt, but gained 150 pounds while at the Station.

Bull 37, *Joubert*, age 14 months, weight 850 pounds. This bull was inoculated December 31st, February 6th, February 21st, March 18th and April 19th, making five times in all. The only disturbance of temperature was March 2nd, nine days after the third dose. He appeared well through the 116 days at the Station and gained 150 pounds in weight.

Lot II consisted of four heifers and eight bulls. They ranged from 10 to 15 months in age. Each one received 1 c. c. of blood February 21, 1901. Primary fever was very acute and almost simultaneous in the whole lot. Nine of them had morning temperature above 106, and two passed red urine. The fever lasted but three or four days and all recovered promptly in good shape.

The secondary fever was somewhat late in making its appearance. It ranged from about the thirty-eighth to forty-fiifth days. Three of these had short reactions between these fevers which lasted but two days only. In one we noticed a third reaction about the fifty-sixth day. The lot as a whole did well, though the heifers that had red urine and one of the smallest bulls fell off some in flesh. The entire bunch of twenty-two head was shipped to the ranch in Sutton county April 20th. Some time after arrival two died of blackleg and later two fevered sharply on exposure to ticks, but no deaths from fever

occurred. The bunch as a whole have done well all summer, and at present seem to be safe from fever.

MARCH BROS. THIRTEEN HEREFORDS.

Lot I consisted of two Hereford bulls which were shipped from Belton, Mo., and reached the Station March 24th, 1900. Their weights two days later were: Bull 116, 860 pounds, and bull 117, 620 pounds. Both were given one c. c. of blood April 5th. Both fevered strongly ten days later. The second reaction was not very acute in either case. A second dose of blood was given bull 116 on May 5th from which no pronounced fever resulted. Both bulls recovered promptly and their systems responded to feed. During the sixty days that they remained at the Station bull 116 gained eighty-five pounds and bull 117, 113 pounds. They were shipped to the owners in Tom Green county May 24th and arrived the 29th in good shape.

June 30.—Turned the bulls out with forty cows in pasture June 15th. They are doing well.

August 22nd.—Both bulls are doing well.

HEREFORD HEIFERS DURING TREATMENT AT THE STATION. NOW IN TOM GREEN COUNTY. 1901.

November 20th.—Bulls have been on the range all summer without feed. Are now fat and healthy.

January 30th, 1901.—Both the bulls are in fine shape.

March 18th.—One of the bulls died of blackleg. He was all right on the 16th and died at noon on the 17th.

Lot II consisted of two bulls 1 year old, three bulls eight months old, one 2-year-old pregnant heifer. All were bred in Missouri. These cattle arrived on the Station grounds January 9th, 1901.

Each received 1 c. c. of blood January 13. Primary fever appeared in all the calves from the seventh to the twelfth day following. The highest morning temperature observed was 107 degrees, which occurred in two cases. The 2-year-old heifer began the primary reaction on the eleventh day. Four days later the temperature reached 107 and continued high six days. Cathartics were given which acted freely. This cow, however, lost appetite, became very yellow about the eyes, white about the nose, very empty, refused to eat anything, would

lie down almost all the time and eventually aborted a foetus of five months gestation.

We removed the placenta in good order, gave stimulants, but the cow finally died of exhaustion. She lived four days after the fever had ceased. A post mortem examination showed typical lesions of Texas fever. The uterus was normal.

The secondary fever began on the thirtieth and thirty-first days. As a rule it was more severe than the primary one and seemed to reduce the calves in flesh very much. One bull in particular did very badly. He was injured in some way on the shoulder on arrival and was quite lame. This showed some improvement in a week or two but he never recovered entirely. We could not detect fracture of any of the parts, and supposed he had been damaged in shipping. Marked atrophy of the shoulder set in, though he bore considerable weight on the leg. The bull finally died in June.

These cattle were sent to the ranch in Tom Green county February 27th, and with the exception of the lame bull, they have done well.

Maloney. Two Shorthorns.

These two calves, whose ages were 10 and 13 months, were given one c. c. of blood each on February 14th, 1901. They were turned on green wheat pasture in the mornings and evenings.

By March 8th one had shown only 103 and the other 105 of fever. They continued to do well without incident until August, when one died from tick fever and the other had fever ranging from 104 to 107, from which it finally recovered.

Miller. Two Red Poll Bulls.

These two bulls were about 14 months old when received at the Station February 16th, 1901. Each received 1 c. c. of blood on the 22nd.

Primary fever appeared promptly in one of them and continued high for five days.

The other showed only 103.5 on the fifth day. The secondary fever was well marked in both animals at the usual time. After fifty-three days both were sent to the ranch in Runnels county and have been in pasture since. No fever occurred up to July 1st although they have been out with the cows all summer. They lost some flesh when the grass became scarce, but have made a satisfactory growth.

Noton. One Hereford Bull.

This was a 6-month-old calf which reached the Station from Illinois February 3d, 1900. On the 5th he was given 1 c. c. of blood. This calf was put on a nurse cow because he was not a good feeder. A feeble primary reaction occurred eighteen days later. Several days later he licked considerable dirt. Secondary reaction occurred from the 11th to the 16th of March. On the 29th he was sent to the farm in Travis county. The calf did very well until June when he died of fever.

NUSOM. EIGHTEEN HEAD OF HEREFORDS.

These calves were raised at Channing, Texas, and arrived at Runge, December 25, 1899.

January 4th, 1900.—Inoculated each with one c. c. blood.

January 14th.—Most of the calves have fever today. One has been off since the 11th. All eat well, but lie down most of the time and appear sleepy and drousy. We are feeding oats, bran, cotton meal and hulls. We also gave them pear of which they ate a liberal amount.

January 15th.—All ate feed well, appear stupid, lie down most of the time.

January 16th.—Calves appear more stupid today. Ate fairly well and cleaned up the trough. Bull refuses pear; the heifers eat it quite well.

January 17th.—Bull left one-half of his feed and laid down at once. Heifers eating quite well.

January 18th.—Bull seems better—eats with some relish. He and some of the heifers are eating dirt. Bowels of all in good shape. All are stupid and pay no attention to surroundings. Uurine clear but amber colored.

January 19th.—Bull anxious for feed today. Heifers all much better and eat well.

January 31st.—The calves have about regained the shrinkage due to inoculation fever and now are on full feed and appear well.

February 12th.—Calves are eating well. We keep their bowels and kidneys active.

February 6th.—The calves are now in second fever. The fever ranges from 104 to 106.2.

February 7th.—Heifers are a little off feed. One, No. 17, refuses feed entirely.

February 8th.—Heifer No. 17 won't eat, gave here a dose of salts.

February 9th.—All eating today. All have eaten more dirt than with their first fever.

February 10th.—All eating today. They still have fever but are doing well.

February 14th.—Calves are getting along very well though they yet have some fever. They are still eating dirt.

March 1st.—Turned all the heifers on pasture, feed them twice a day. The bull has not recovered so well as the heifers.

March 13th.—The calves are getting along nicely. They eat well and are gaining in flesh.

March 13th.—The calves are doing well. They have some ticks on them. I feed twice a day and let them run in the pasture.

April 18th.—The calves are doing extra well. All carry full grown ticks. Have noticed no signs of fever since the secondary recation.

April 29th.—The calves are doing extra well. They have a large number of ticks on them.

May 24th.—The calves are doing well. They are as fat as I care to have them.

June 9th.—The heifers are doing well, but we sometimes think we notice that they have some fever, but nothing serious.

July 8th.—The calves are still doing extra well. They are full of ticks, but it don't seem to hurt them. They are fat and fine.

August 27th.—The calves are all doing well. The season is now so far advanced that we regard them safe.

No deaths occurred in this lot.

O'Connor & Wiess. Four Hereford Bulls.

These four bulls were raised in Western Texas beyond the quarantine line. They arrived at the Station for inoculation March 16th, 1900, and were given 1 c. c. of blood on the 19th.

Bull I, Cordial, Jr., was 20 months of age and weighed 1270 pounds. He was rather fat. The first high morning temperature occurred on the 31st. For two days previous the morning temperature had been normal, but the evening temperature was 105. Fever continued five days. The appetite remained good and the bull did not appear sick

REGISTERED HEREFORD BULLS DURING TREATMENT AT THE STATION MARCH, 1900.

but was found dead on the morning of April 5th. Post mortem showed typical Texas fever except the urine which was clear.

Bull II, Cordial Second, was 18 months old and weighed 1150 The first high morning temperature occurred on the twentieth day, though there had been high evening temperature for several days. The secondary fever was short and mild. The bull received a second dose of blood on the forty-ninth day from which we saw no effects. This bull was shipped to the ranch in Goliad county May 24th. He passed the summer without sickness and did considerable work among the cows.

Bull III, Sir James, was 1 year old and weighed 1030 pounds. He was quite fat. Primary fever was very mild in this bull, but the secondary was well marked. He received a second inoculation on the forty-seventh day which produced no apparent sickness. This bull

was shipped to Goliad county May 24th. He passed the summer without further sickness.

Bull IV, Howell, Jr., aged 9 months, weighed 760 pounds. He was inoculated at the same time as the preceding. Had primary and secondary fevers. Was reinoculated on the forty-seventh day and was apparently over the fever entirely. On May 23d, sixty-five days after inoculation, we found him down with blackleg, which killed him within a few hours.

Osborn. Nine Red Polls.

This lot were young cattle, bred in Iowa, about 10 to 14 months of age. They arrived at the farm in Hill county December 6th, 1900. December 20th each received 1 c. c. of blood.

They were fed shelled corn, oats and wheat and run on green oats for pasture.

January 1st.—Some of the calves have fever above 105.

January 2nd.—All of the calves have high fever, one is above 107. Another has red urine. We gave them salts.

January 8th.—The calves have come through the first fever without loss.

March 14th.—The calves are doing well except one heifer, which is thin in flesh. The bull has had fever and red urine recently, but is better now.

March 18th.—All the calves are doing fine. We have had no further trouble with them. They are all now full of ticks, but no fever.

August 1st.—The heifers are doing very well. They have a great number of ticks. The bull is doing equally well except some trouble with his ear.

No deaths occurred in the lot.

Peters. Nine Red Polls.

This lot of Iowa bred calves reached the Station February 20th, 1901. On February 22 each was given 1 c. c. of blood.

Heifer No. 6, age 12 months. No primary fever was observed. The highest temperature was 102.8 on the ninth day.

Secondary fever began on the thirty-third day and continued six days. After this some mild forms were found lasting one or two days only.

A second inoculation was made June 2nd—101 days after the first. This caused high fever. We found fourth day, 106.6; fifth day, 107; sixth day, 107.2; seventh day, 105.4; eighth day, 105.2; ninth day, 104; tenth day, 105; eleventh day, 103.4; twelfth day, 102. From this on no fever was observed. This cow has been in ticky pasture all summer and remained in good health.

Heifer No. 30, age 9 months. Primary fever high eighth to twelfth days. Second fever high from the twenty-third to twenty-ninth days. Third fever mild from forty-ninth to fifty-second days; fourth fever mild from sixty-ninth to seventy-third days. She was given a second inoculation on June 2nd which produced no result.

Heifer No. 32, age 8 months. Primary fever began on the eighth day and lasted sixteen days. On the tenth day it was 107.7 and red urine was observed.

Secondary fever began on the forty-second day and lasted nine days, but was milder than the primary one. This heifer received a second inoculation June 2nd which caused no appreciable fever. She has been in ticky pasture all summer without sickness.

Heifer No. 34, age 8 months. Primary fever sixth day, 106; seventh day, 105.3; eighth day, 107.3; ninth day, 105.2, bloody urine; tenth day, 101.8. Secondary fever on twenty-ninth and thirtieth days.

Second inoculation on June 2nd produced a strong reaction lasting from the fourth to the sixteenth day. On one day it reached 107. Recovery was rapid and growth satisfactory afterwards. No fever on exposure to ticks.

Heifer No. 37, age 9 months, primary fever mild from eighth to twelfth day. Secondary fever scattering with no fever on consecutive days.

Second inoculation June 2nd. This produced high fever which began on the eleventh day following and continuing seven days. The heifer recovered in good condition and has been in ticky pasture all summer without fever.

Heifer No. 80, age 13 months. Primary fever severe. Eighth day, 104.6; ninth day, 104.2; tenth day, 106.6, gave salts; eleventh day, 105.8, bloody urine; twelfth day, 99.7. Secondary fever began on the twenty-second day, 103.5; twenty-third day, 105.8; twenty-fourth day, 107; twenty-fifth day, 106.4; twenty-sixth day, 106.4; twenty-seventh day, 106.6; twenty-eighth day, 105; twenty-ninth day, 103.

A third reaction occurred from the sixtieth to the sixty-fourth days which ranged from 103.8 to 104.3.

This heifer was given a second dose of blood on June 2nd which produced no fever.

Heifer No. 88, age 9 months. Primary fever severe. Seventh day, 103.6; eighth day, 106.3, gave salts; ninth day, 107, bloody urine; tenth day, 100.1.

Secondary reaction: Fourteenth day, 103; fifteenth day, 104; sixteenth day, 105; 17th day, 106.4; eighteenth day, 106.2; nineteenth day, 104.8; twentieth day, 104.2; twenty-first day, 102.2. A mild third reaction occurred on the fifty-fourth and fifty-fifth days.

Second inoculation on June 2nd produced a mild reaction of 104 for one day only.

This heifer had some fever during the first two weeks of August which was due to ticks. We greased them all on the 19th, which killed the ticks and there has been no further trouble.

Heifer No. 89, age 5 months. This calf was very small and thin in flesh, apparently from being weaned too young. Primary fever was well marked from the sixth to eleventh day and again from the fourteenth to the eighteenth day. Secondary fever began on the twenty-ninth day and continued seven days in the usual manner.

Second inoculation on June 2nd caused a mild reaction lasting four days. No disturbance of note occurred on exposure to ticks and the calf had made a very fine growth during the summer, considering her unfavorable condition.

Bull 94, age 19 months. This bull was in good condition, but not fat. Primary fever very mild—103 on the eighth day. Secondary fever began on the twenty-fourth day and continued eleven days. The bull continued in fine shape. Second inoculation June 2nd. This caused a sharp fever which began on the tenth day following and lasted ten days. This caused a shrinkage in flesh and the bull did not thrive so well for the sixty days following. He has been with the

heifers all summer and has not done as well as is desirable. By October he began to regain his flesh and spirit.

This lot of cattle has done well as a whole. They have been well fed all summer and have carried a remarkable number of ticks.

Ponder. One Jersey Bull.

This 4 months old Jersey bull calf, bred in Nashville, Tenn., was given 1 c. c. of blood at the Station April 12th, 1901. He was put on a nurse cow and fed all he would eat of bran, oats, corn chops and hay. Primary fever was mild and lasted three days. Secondary fever was also mild and lasted from the thirty-second to fortieth days. He was turned into a tick pasture May 17th which was followed by a spell of fever which began June 7th and lasted twelve days. The calf held up very well, responded to feed and milk and made a fine growth during the summer.

Primm. Forty five Red Polls.

These cattle were handled in three lots.

Lot I consisted of eight heifers and two bulls. They had been bred in Iowa and their ages ranged from 10 to 12 months. They reached the owners' farm in Bastrop county, February 9th, 1900, and were inoculated with 1 c. c. of blood on February 19th. They were fed on cotton seed mainly.

March 1st.—One of the heifers has fevered very severely, 106, red urine was passed and she has just died. We found it impossible to secure a cathartic action. Six others have high fever, but are doing well.

Lot II consisted of ten Iowa bred calves that arrived April 13th. These were inoculated April 20th with 1 c. c. of the same cow's blood as lot I.

These calves were fevered at the usual time and were pastured on green oats, which kept the bowels open.

July 9th—We have had the calves in pasture some time. They became very ticky, but are doing very well.

Lot III consisted of fifteen calves bred in Wisconsin. They reached Texas October 15th, 1900, and were inoculated November 15th.

Fever appeared on the third day after inoculation. Attention is called to the early appearance of fever. It is probable that these cattle had become infested with ticks and that inoculation shortened the period of incubation. This then becomes a source of danger. Cattle should be inoculated immediately on arrival to avoid this. We have had some serious losses from failure to observe this point.

December 10th.—Bull 18 has just died. His bowels were open and no red urine. He ate nothing for a week. We gave him sweet milk. We also gave him salts and in a few hours found him dead.

December 30th.—All the calves are now over the fever and are doing very well.

February 18th.—The calves are doing well except one which is lame.

May 20th.—The calves are out in a wooded pasture and have a considerable number of ticks on them, but they are all in good fix.

August 18th.—Cattle have done very well. We have had no trouble with them. They have ticks now.

ROSS. NINE RED POLLS.

These calves were all bred in Iowa. They arrived in Texas February 12th, 1901, and at the owner's place, in Limestone county, on the 15th. They ranged in age from 7 to 10 months. Each was given a dose of 1 c. c. of blood on the 16th. The fever varied greatly in different individuals. For instance, Neva, a 7 months heifer, had a severe primary fever from the seventh to the twentieth day and no continuous secondary fever. Rhenie, a 9 months heifer, had a primary fever one day only and a strong secondary one extending from the thirty-fourth to the forty-third day.

Two others, Babe and Evaline, showed primary fever on the eighth to twelfth days. In Babe the fever was very high (107.2), and red urine occurred on the eleventh day. Both showed a secondary fever period of three days beginning on the twentieth day after inoculation.

These four calves are noticed in detail because the three types of fever reaction occur in this lot.

No further trouble except an occasional high temperature of short duration occurred among the calves. About one-half of the lot have fallen away in flesh and the other half have made a satisfactory growth.

RHEA. FIFTY SHORTHORN HEIFERS.

This lot consisted of fifty shorthorn heifers whose ages ranged from 10 to 18 months. All were raised in Missouri and had arrived at the ranch in Collin county, Texas, April 9th, 1900. None of them were fat. The majority were in good thriving order and a few were rather thin.

On April 12th each was inoculated with 1 c. c. of blood. They were run on green wheat to keep their bowels open.

April 26th.—Thirty-five of the calves have fever above 104. The fever is most severe on the older ones, four of which have passed red urine. One required salts to get the bowels moving.

May 14th.—The calves are doing well. The sick ones have recovered.

July 31st.—The cattle are doing well. One small one has died of pneumonia, but none of fever. One large heifer that was heavy in calf and was not inoculated, has died from injuries to the womb during calving. No deaths from fever yet, though some have been sick a few days at a time all summer. There are many ticks on them. We apply oils to keep them in check.

September 4th.—The heifers are doing well. No deaths from fever yet.

December 11th.—There have been no deaths from fever, but some of the calves are quite thin. We have had two calves from inoculated heifers. One is all right. The other came dead. The mother of the first one had red urine, but recovered promptly. The mother of the second fevered lightly from inoculation, but had several attacks of fever during the summer and did not thrive well. There can be no question but what the whole lot has been stunted somewhat by inoculation. Those that fevered severely at first made the best growth. Those that fevered less had attacks every two or three weeks all summer and are now smaller than the others. They have a large number of ticks on them.

RHOME. TWENTY-THREE HEREFORDS.

These animals were all registered Herefords, bred in Missouri, and

varied in age from 8 to 17 months. They were shipped South and arrived at the ranch in Wise county, Texas, March 25th, 1900.

March 29th each received 1 c. c. of blood sub-cutaneously. They were fed crushed corn and a mixture of oat straw and Johnson grass. During the day they were pastured on green wheat, which kept the bowels open.

Primary fever appeared as early as the fourth day in one heifer, but in the majority it appeared from the eighth to the eleventh day. The whole group fevered in the usual manner except one large heifer which deserves special mention. This one (No. 48) was of very robust constitution, aged 14 months, and a model of the beef type. The highest temperature we found was 103 degrees on the fifth day after inoculation. Nothing more was noticed until the thirtieth day when the secondary reaction began and continued thirteen days. This case is noticed because we often find that the owners of the cattle became uneasy if the primary fever does not appear strongly at the usual time and they are inclined to insist on a second inoculation about twenty days after the first one. This would likely lead to fever about ten days later which would be about the thirtieth day after inoculation; which is about the time for the second fever from the first inoculation. The two would then probably endanger the life of the calf. I think we killed some animals by yielding to the pressure for a second dose too soon after the first one. The plan is a dangerous one and will lead to unnecessary losses if persisted in.

The secondary reaction appeared as early as the twenty-sixth day in two of the calves—in the majority it appeared from the twenty-ninth to the thirty-third day, while one it was so late as the thirty-seventh day.

May 7th.—Bull 34 died at the close of the second fever, but all of the others recovered. He had been eating considerable dirt.

July 28th.—The calves are all doing well and are regaining some of the flesh they lost. The second fever was very hard on them and reduced several of them very much.

August 8th.—Heifer No. O was found today very sick, thin watery discharges from the bowels at first, which changed to mucus and blood. There was violent straining. Fever about 105 degrees. She continued this way two days and died. The rest of the calves are growing and improving. They all carry a few ticks, and have some fever. We found five of them with marked fever, but nothing very serious.

September 15th.—No further trouble with the calves.

Lot II. Three registered Hereford heifers were treated at the Station. They each received 1 c. c. of blood February 20th, 1901. The primary fever appeared promptly in two of them, which caused red urine. The third one fevered mildly. She was of a robust constitution and held up well in flesh. The smallest one of the three would lie around almost the entire day, would not follow the bunch, would not crowd in among the others at feeding time, would eat but little for days, the hair appeared dead, emaciation set in, yellowness of the skin about the eyes and nose, and she would lick dirt for hours at a time. There were certain places in the lot where she would lick holes in the ground that would hold one to two gallons. This continued for days and the passages had the appearance of mud. Finally the bowels ceased to operate and salts and oils were given with only partial success. We also gave eserine-pilocarpine in five grain dose hypodermically. This produced profuse slobbering and great prostration, but caused an unloading of the bowels. There came

through the bowels an accumulation of sand and mud the size of the inside of the gut. These were covered with a layer of mucus and epithelium shreds. Having succeeded in opening the bowels the calf improved slowly. She was very thin and weak for weeks and it seems probable that there might yet be more sand in some of the stomachs that was not gotten rid of.

This case is mentioned in detail to call attention to the danger of too much swallowing of sand. The best way to prevent this seems to be to pasture the calves on green oats or wheat. This prevents the sand from lodging. The use of eserine in such cases is not considered entirely a safe proceeding.

August 17th.—The calves are doing well. The smallest one is improving some.

RIVERSIDE HEREFORD CATTLE CO. ONE HUNDRED AND THIRTEEN HEAD.

This experiment differs from the others reported in this bulletin in that the inoculations were made on the ranch at Ashland, Nebraska. It embraces animals of from 1 to 20 months of age, and all of one breed. The number of deaths was eight. This must be regarded as quite satisfactory when we recall that the work was done during the summer of 1901, which was perhaps the hottest and dryest season ever known. Several of the animals in lot "E" died after having eaten wilted and fermented corn. This is not surprising when we remember that under the most favorable conditions there occurs extensive congestions and erosions of the mucus membrane of the digestive tract. They must be regarded as casualties. This work was in charge of Mr. Thrower.

Lot "A"—This consisted of thirteen Hereford sucking calves. The oldest one was 73 days and the youngest 40 days. Each received 1 c. c. of blood from a Texas cow, on April 6th, 1901. The cows were well fed on bran, corn chops, oil meal and prairie hay

The primary fever appeared in all the calves at the usual time. The first one to show fever being on the seventh day. The majority began about the tenth day. Five of the number passed red urine and had fever ranging from 106 to 107.2 degrees. One of the number died on the eleventh day after inoculation. During the fever but one calf refused to suck the cow, and that but for one day. During the acute stage of the fever we gave each one salts and secured vigorous cathartic action in each case. In some cases we gave castor oil shaken up with milk. This gave quite satisfactory results and was not so offensive to the calves as salts. The secondary reaction was much milder than the primary one. The highest morning temperature observed was 105.6 degrees.

Second Inoculation.—June 15th each one received a second dose of 1 c. c. of blood. Five of the number had fever from this on consecutive days. The others would have mild attacks lasting but one day. At no time were they sick to a conspicuous degree, and nothing would have been noticed by an ordinary observer. By this time the calves had learned to eat grain and bran pretty well, and were grazed on wild rye.

Third Inoculation.—One cubic centimeter of blood was given each calf August 5th. Following this we found one calf with high temperature one day; one, two days; and one, five days. A fourth inoculation was given September 27th (2 c. c.), and a fifth inoculation November 13th (1 c. c.), from which no results were observed. This lot of calves were well fed during the whole summer and by Decem-

ber 1st were in good condition. They had made better growth than the other calves on the ranch of the same age, kept in the ordinary way; but they were not so well developed as the calves of the same age which had been given the same advantages. There can be no doubt that inoculation interferred with the growth of the calves even under the very best possible conditions.

Lot "B"—This lot consisted of eight grade bulls and twelve registered heifers. All were about 18 months of age. They had been raised in the mountains of Colorado, and were under in their size for their age. Each received 1 c. c. of blood April 24th. All had primary fever except heifers numbers 1 and 5. Heifer number 8 began to fever on the third day, and continued to do so sixteen consecutive days. She survived, however, but is very much stunted and very thin in flesh. Heifer number 2 died on the fiftieth day. She had passed almost through the second fever and was given a dose of linseed oil. She resisted the medicine, and some of it evidenely passed down the trachea for she became strangled and died in a few minutes.

A second inoculation of 1 c. c. of blood was given August 5th. Heifer No. 1, which showed no fever from the first dose, responded to the second one, and had a fever period of nine days beginning September 1st. Heifer number 5 also responded with a fever period from August 24th to 29th. Heifer number 10 and bull number 4 had marked reactions from the second inoculation, but none of the others showed fever on consecutive days.

A third inoculation of 1 c. c. was given September 27th. No reaction occurred from this except heifer number 1, which had fever of 105.2 degrees on October 14th. For the three days following her temperature was sub-normal and she died October 17th.

Post mortem examination showed erosions and congestions of the mucous membrane of the bowels.

A fourth inoculation of 1 c. c. of blood was given each November 13th. No systematic attempt was made to ascertain if any reaction occurred, but during the following fourteen days no conspicuous sickness was observed.

This entire lot was fed crushed corn and hay during the entire summer, as the prolonged drouth prevented any grass. As a general rule the animals have made a satisfactory growth.

Lot "C"—This lot consisted of ten bulls about 7 months old and twenty heifers from 12 to 16 months old. They were fed during the entire summer as there was no grass in the pasture. The first inoculation occurred March 20th. Five of the heifers and one of the bulls had no marked primary fever and a very mild secondary one. In the others some had very severe primary and secondary fevers. In two of the heifers high fever occurred on the second and third days after inoculation. Heifer number 3 died July 6th at the close of the second fever. The remainder of the lot recovered promptly and showed no evil results from inoculation.

A second inoculation of 1 c. c. was made August 5th. Six of the heifers and two of the bulls had primary fever from this which lasted two or more consecutive days. Three heifers had well marked secondary reactions from this dose. No deaths however occurred.

A third inoculation of 1 c. c. of blood was given September 27th. Five heifers and one bull showed primary fever for two or more days following this inoculation; but no secondary reaction occurred.

A fourth inoculation of 1 c. c. of blood was given November 13th.

No systematic record of the temperature was made, but those in charge of the animals did not detect any results from it.

In this lot of cattle we observe that some of them reacted to the first inoculation only; others reacted to the first and second, and one reached to the first, second and third.

In heifer 29 we found fever on the thirty-third and the thirty-fourth days after the first inoculation, but though three more inoculations were made no fever was detected. She was of a very robust constitution and seemed to have kept the disease in check.

From a study of the group we have not been able to discover that any definite number of inoculations is required, or any definite amount of blood is necessary before immunity is attained. Animals differ so much in individuality and susceptibility that it does not seem probable that any rule governing the matter can be given.

Lot "D"—Four Hereford bulls about one year of age were given 1 c. c. of blood June 15th, 1901. No primary fever occurred in either bull. All of them had secondary fever at the usual time. A second dose of 1 c. c. was given August 5th from which three reacted.

A third dose of 1 c. c. of blood was given August 27th and a fourth one November 13th. From these two inoculations no reactions occurred. These four calves have done very well and have made good growth.

Lot "E"—This lot consisted of eleven bulls and thirty-five heifers, whose age ranged from 14 to 18 months.

Each one was given 1 c. c. of blood September 3rd, 1901. Of the forty-six animals, eleven showed very feeble or no primary reaction. Of the remainder all were very severally fevered, and seven of them passed red urine. Two of them died.

The secondary fever appeared at the usual time, and three more died at the close of this reaction. No red urine was obesrved during the secondary reaction. During the month of October the only feed available was dry hay and wilted drouth-stricken corn which fermented in the pile. This seemed to cause acute congestion of the bowels and thereby brought about weakness and no doubt contributed to the death of several of the animals. After recovery they were given a second dose of the blood November 13th, from which no illness occurred.

Schreiner. Twenty Herefords.

These may be considered in two lots.

Lot I consisted of four bulls which had been bred in Hartley county, Texas. These bulls were inoculated February 6, 1900. Primary fever appeared in three of them on the seventh day.

March 20th.—The bulls are doing well. Three of them are now in the second fever. One has lost considerable flesh. One of them has not fevered to a conspicuous degree yet.

June 30th.—The four bulls run with the range cattle and are ticky. They have lost some in flesh but are doing well.

November 21st.—The four bulls have made a good growth and are doing well. They have run with Texas cattle all summer and become quite ticky. There were no noticeable effects from the ticks.

Lot II consisted of sixteen head of Herefords. Ten of them were from Hartley county, Texas, and six were from the North.

Each received 1 c. c. of blood February 21st, 1901.

No effort was made to preserve a systematic record of fever. One of the calves died three or four days after inoculation from an injury. The others have all done well and have passed through the summer in satisfactory condition.

Shands. Four Red Poll Heifers.

These four calves were bred in Iowa and reached the owner's farm at Forney in January, 1900. They were kept in a horse stable and were given 1 c. c. of blood March 5th from a cow on the farm. No fever resulted from this though the temperature was taken daily for more than a month. No more inoculations were made because it seemed impossible that the calves would be exposed to virulent ticks. On this farm there is no permanent pasture and by rotation of crops, the ticks have been almost entirely destroyed. The calves continued to do well all summer and had shown no sickness by November from which time no records have been continued.

Specht. Seventeen Herefords.

This lot of calves was received at the Station from Kansas and Missouri, December 20th, 1900. After ten days' rest each was given 1 c. c. of blood December 31st. All were fed the same ration of bran, oats, corn chops and prairie hay.

Ida, age 10 months, weight 610, primary fever mild, 103 on the thirteenth day. Second inoculation of 1 c. c .of blood on the fifty-third day. This caused fever on the sixty-seventh day, 104.4; sixty-eighth day, 103.2; sixty-ninth day, 103.4; seventieth day 105.6; and a short fever on the seventy-eighth and seventy-ninth days. During the eighty-one days at the Station this heifer gained sixty pounds.

Joewetah, age 11 months, weight 730 pounds. No primary or secondary fever from the first inoculation. Second inoculation on the thirty-eighth day. No result. Third inoculation on the fifty-third day which produced fever on the fifty-sixth day, 105; fifty-seventh day, 105; fifty-eighth day, 104.2; fifty-ninth day, 102.8; sixtieth day, 105; sixty-first day, 106.4; sixty-second day, 105.3; sixty-third day, 103.2. From this time on no fever occurred during the eighty-one days of the experiment. This heifer gained 110 pounds.

Corrinne, age 13 months, weight 630 pounds. No primary or secondary fever from the first inoculation. Second inoculation on the thirty-eighth day. No result.

Third inoculation on the fifty-third day which produced fever on the sixty-third day, 106; sixty-fourth day, 105; sixty-fifth day, 103.6; sixty-sixth day, 105.4, red urine; sixty-seventh day, 107.2; sixty-eighth day, 103.2; sixty-ninth day, 103. A secondary reaction followed the third inoculation some days after the heifer reached the ranch. During her stay of eighty-one days at the Station she gained eighty pounds.

Belva, age 11 months, weight 690 pounds. Primary reaction on ninth and tenth days and a secondary on the twenty-third day, 104.8; twenty-fourth day, 104.6; twenty-fifth day, 104.2. We noticed fever on the thirtieth, thirty-first and thirty-fourth days, and again on the fifty-eighth day. Only one inoculation was given this heifer. She gained 110 pounds while at the Station.

Lady Dawn, age 9 months, weight 540 pounds. No primary reaction was observed, but mild fever on the twenty-fifth, twenty-sixth, thirty-fourth and thirty-seventh days. Second inoculation on the thirty-eighth day. Following this we found on the thirty-ninth day, 104.2; fortieth day, 104.4; forty-first day, 106.1. This reaction was probably a delayed secondary fever from the first inoculation because twelve days after the second inoculation we found—fiftieth day, 104.2; fifty-first day, 103; fifty-second day, 105.4; fifty-third day, 106.8; fifty-fourth day, 104.4; fifty-eighth day, 103.4; fifty-ninth day, 104.1; sixty-first day, 104; sixty-second day, 103. No more attacks of fever occurred at the Station and she had gained eighty-five pounds in weight.

Jessamine, age 9 months, weight 550 pounds. Primary reaction strong. We found on the ninth day, 104.6, gave salts; tenth day, 103; eleventh day, 104.6; twelfth day, 104; thirteenth day, 104.2; fourteenth day, 105; fifteenth day, 105; sixteenth day, 105. Secondary reaction mild—lasting only three days. We found on the twenty-second day 104.2; twenty-third day, 104; twenty-fourth day, 103. From this time no reactions above 103 were observed. This heifer gained ninety-one pounds during the eighty-one days of the experiment.

Virgie, age 8 months, weight 540 pounds. Primary reaction on the tenth, eleventh and twelfth days ranging from 103 to 104.4. No prolonged secondary fever occurred, but we found moderately high temperature on the twenty-fifth and fiftieth days.

Second inoculation on the seventy-eighth day which produced a sharp reaction a week or ten days later, after the heifer had been sent to the ranch in Wichita county.

She recovered from this in good shape and has had no further trouble. She gained ninety-five pounds in weight while at the Station.

Attention is called to this lot of seven calves in that each received the same size of dose of the same blood and at the same time, yet no two fevered similarly.

Lot I consisted of nine heifers and one bull. They reached the Station from Kansas February 20th, 1901, and were inoculated February 21st. In eight of them the primary fever was very severe. Six passed red urine and one died.

Gaperian, age 11 months. Primary fever; eighth day 107.6, gave salts; ninth day, 104.8; tenth day, 105, gave salts; eleventh day, 104.

Secondary Fever.—Twenty-seventh day, 103.5; twenty-eighth day, 104; twenty-ninth day, 103.8; thirtieth day, 105; thirty-first day, 102.2.

Tertiary Fever.—Thirty-sixth day, 105.8; thirty-seventh day, 106; thirty-eighth day, 105.8; thirty-ninth day, 104.6; fortieth day, 105; forty-first day, 102.3. No fever on consecutive days after this.

Garum age 10 months. Primary fever: Eighth day, 105.8 ninth day, 105; tenth day, 106.4, bloody urine; eleventh day, 106; twelfth day, 104.8; thirteenth day, 102.3. We found a mild reaction of 103.3 on the twentieth day, but no prolonged period until the forty-fifth day—103; forty-sixth day, 103.8; forty-seventh day, 105.8; forty-eighth day, 104.6; forty-ninth day, 104.2, gave salts; fiftieth day, 102; fifty-first day, 105.8, gave salts; fifty-second day, 101.8; fifty-third day, 104; fifty-fourth day, 102.8. No other fever has occurred in this heifer during the summer.

Gauze Second, age 10 months. Primary reaction acute—eighth

day, 106.3; ninth day, 103.8; tenth day, 104.8; eleventh day, 105.4; twelfth day, 100.4. No further fever until the regular secondary which began on the fortieth day and continued seven days between 103.4 and 105.2. No fever during summer of 1901.

Gombo Second, age 9 months. Primary fever began on the tenth day with a temperature of 104.6 and passage of red urine. On the eleventh day, 106; twelfth day, 102. From this on no fever occurred until the secondary reaction which began on the forty-fourth day and lasted five days, ranging from 103.6 to 104.8. This heifer had no trouble during the summer following.

Good Nature, age 12 months. Primary fever severe. Eighth day, 103.4; ninth day, 105.4; tenth day, 106; eleventh day, 106.5; twelfth day, 103.4, red urine; thirtenth day, 101.4. No fever from this until the regular secondary which began on the forty-second day and continued eight days, ranging from 103 to 104.3. This heifer recovered in good shape and has passed the summer successfully.

Grapevine, age 11 months. Primary fever eighth day, 106.2, gave salts; ninth day, 104.6; tenth day, 106.3, red urine; eleventh day, 103.4; twelfth day, 101. The temperature continued normal until the twenieth day when we found 105.4 and gave another dose of salts. No disturbance of temperature occurred until the regular secondary reaction which began on the thirty-eighth day and continued eleven days, ranging from 103.4 to 105.

Electa, age 11 months. This heifer was fat and very attractive. She had been fed for exhibition and sale and had become grain burnt and foundered. *Primary fever began on the eleventh day*, 105.8, and red urine was passed; twelfth day, 105.4, red urine; thirteenth day, 104.2; fourteenth day, 102; fifteenth day, 103; sixteenth day, 100.4, *died*. It will be noticed that there was an apparent survival of the fever period, but the animal refused all food and finally died.

Gráter. This heifer was inoculated at the same time as the others of the Lot II, but no primary fever occurred. The secondary (?) appeared on the thirty-first day and continued nine days. After arrival at the ranch she had another attack which did not go above 105, from which she recovered in good shape.

Snowdrop. Primary fever mild. We found but 103 on the eighth day. Secondary fever began on the thirty-sixth day and continued eight days ranging from 103 to 104.9.

Bull Stannard. This bull began to fever on the seventh day after inoculation, which continued eight days ranging from 103 to 105.2. He did not appear to be sick, but continued eating and apparently well. A well marked secondary fever began on the twenty-fifth day and continued eleven days. During the fever stages the bull actually improved in flesh and growth and to the ordinary observer appeared in good health.

The seventeen animals have done well except the heifer which died. They have all passed the summer of 1901 on the ranch in Wichita county and have made a satisfactory growth.

TACQUARD. FORTY-FIVE HEREFORDS.

This lot consisted of twenty-four bulls and twenty-one heifers. They were all about 1 year old and had been raised near Clarendon, Texas. They had been shipped to Hitchcock, December 1st, 1899, and were not inoculated until February 10th, 1900. Each re-

ceived 1 c. c. of blood. The primary fever appeared on the seventeenth among a few of the calves.

February 23rd.—All of the heifers are fevering strongly. One has just died. Her bowels became unmovable. Only five or six of the bulls show fever enough to refuse their feed.

March 8th.—All of the bulls showed loss of appetite and seemed dull and sluggish. They lost flesh, but not so much as the heifers.

April 18th.—All the calves are doing well. No loss except the heifer already mentioned. They are on grass with a small feed of chops and cotton seed meal.

August 15th.—Have the calves out with native cattle. Ticks are very bad this year. Have lost one bull.

November 22nd.—The September storm damaged us greatly. We have not been able to give the calves the best attention. Ticks have been very numerous and we have lost three bulls from fever and one heifer from neglect. We have begun feeding them.

WARING. TWENTY-THREE HEREFORDS.

These cattle arrived at the ranch in Concho county, Texas, December 14th, 1899, and were inoculated December 29th with 1 c. c. each.

January 8th.—The cattle show fever today—tenth day.

January 10th.—Fever runs from 104 to 107.5. We are feeding pear, millet and Johnson grass.

January 21st.—All of the calves have recovered from the primary fever and are now feeding well. Two of them have had little or no fever above 103.5.

February 5th.—The two calves which had such a feeble primary fever are fevering now (secondary reaction). They have 105.5 degrees.

All of the calves have lost flesh, but are feeding fairly well.

February 22nd.—All of the calves have passed the second fever without loss. They fevered as high as during the first period. Their temperature ranged from 104 to 107 degrees.

Some have fallen off a good deal in flesh and we noticed five of them bloated occasionally. They are improving rapidly.

May 9th.—Two weeks ago we lost two of the bull calves from eating, we think, some poisonous weed. Neither showed symptoms of Texas fever.

One of the calves has had Texas fever, temperature 106 degrees. We gave him salts and quinine and he has recovered. He was quite ticky. All of the other calves have been in contact with ticks for six weeks.

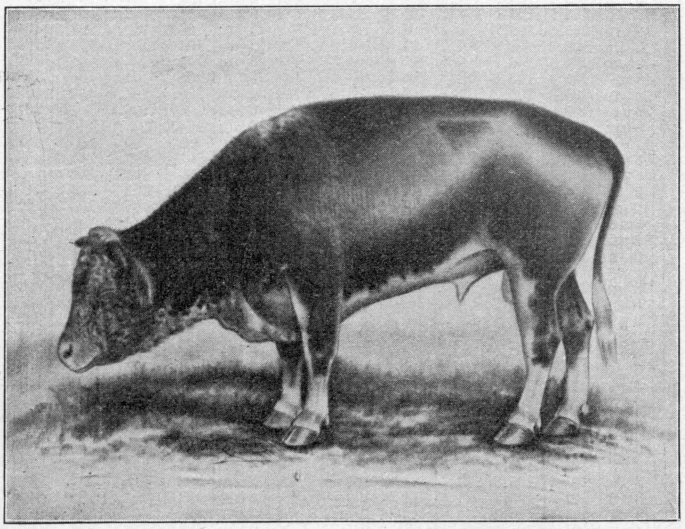
May 29th.—All of the calves are ticky, and are in fine condition and are doing well.

August 15th.—One of the calves which had such a feeble primary fever has died of fever. (See note of January 21.) All the others have been well infested with ticks and have done considerable service and are now looking well.

WANGEMAN. ELEVEN SHORTHORNS AND HEREFORDS.

Lot I consisted of four Hereford bulls. They were raised in Illinois and at the time of their arrival at the Station were eighteen and 20 months old. They ranged in weight from 765 to 890 pounds. Each received 1 c. c. of blood January 27th, 1900.

Bull 68 was the first one to show fever. He showed high temperature on the afternoons of the thirteenth and fourteenth days and the first high morning temperature on the fifteenth day. We have frequently observed that the afternoon temperature will be high a day or two before the reaction becomes constant. The bull's fever remained high during the entire twenty-four hours for seven days. We were desirous of learning if there be much variation during the day or night in such cases, and to ascertain this we made observations every three hours. During the fever this bull ate very little, he would lie around most of the time, and when on his feet would lick up dirt. The secondary fever began on the forty-fifth day and continued five days. There were not the high temperatures of the primary fever, but the animal seemed to be



HEREFORD BULL No. 68 DURING THE PRIMARY FEVER.
THE ATTITUDE IS CHARACTERISTIC.

much weakened and for days he laid down the most of the time and ate very little or nothing. Stimulants of whisky, nuxvomica and arsenic were given frequently and after some days he managed to survive. The three other bulls in the lot fevered in the usual manner. Two of them were given a second dose of blood on the seventy-eighth day after the first dose. The four bulls were sent to the ranch in Bee county April 19th, 1900. They were turned in pasture May 1st. Grass was good at the time and very few ticks had appeared.

June 2nd.—The bulls are doing well.

August 5th.—All the bulls carry a great many ticks. Three of them have lost flesh. We have just greased them well and turned them out again.

PRIMARY AND SECONDARY REACTIONS.

	No.	Age	Breed	Dose	Weight	Weight	Gain or Loss
Bull.....	66	20 months.....	Red Poll	1 cc	940	940	0
Bull.....	68	18 months.....	Hereford	1 cc	805	790	-15
Bull.....	69	21 months.	Hereford	1 cc	890	960	+70
Bull.....	70	18 months.....	Hereford	1 cc	765	850	+85
Bull.....	74	13 months.....	Shorthorn	1 cc	885	1045	+160

PRIMARY FEVER PERIOD

		No.	66	68	69	70	74
1st day of Fever	9 am	103.7	101.5	101.8	101.4	103.2
	12 n	.....	....	.....	....	103.5
	3 pm	.....	.....	.....	104.6	103.7
	6 pm	105	105.8	104	105.5	104.7
	9 pm	.....	.....	104.2	105	103
2nd Day	12 m	.....	.....	104.4	105.8	104
	3 am	.....	.....	103 6	105	103 8
	6 am	104.5	105.7	101 4	103	103 4
	9 am	.....	.....	100.6	102.6	103.6
	12 n	.....	.....	102.2	102.5	105.3
	3 pm	.....	.....	101.6	102 8	104.6
	6 pm	106.6	105.5	102 5	103.8	104.2
	9 pm	.....	.....	102.6	105.7	102.4
	12 m	.....	.....	103	106	103.6
	3 am	.....	.....	101.6	105	103.6
	6 am	105.7	105.3	102.4	105	103.4
3rd Day	9 am	105.7	106.5	101.3	104 3	103 4
	12 n	106.7	106 1	102.2	105.8	104.6
	3 pm	105.6	106.7	100.4	104.6	106.1
	6 pm	106.6	106.8	101.7	104.8	104.9
	9 pm	106.1	106 1	102.5	105 4	104.3
	12 m	105.4	106.1	104	105.8	103.4
	3 am	105 1	106.2	103 8	105	103.6
	6 am	106.2	106	103.4	104.6	102.8
	9 am	106.2	105.9	103.7	103.3	102.2
4th Day	12 n	105.5	106.9	103 6	104.6	105.5
	3 pm	105 8	106 9	103.7	104.5	106
	6 pm	106.3	105.8	103.4	106	106.1
	9 pm	104 2	106.2	101	104.5	105.5
	12 m	103.7	106.2	101.6	104	105
	3 am	104.8	105.8	101.2	103.4	105
	6 am	104.8	106 4	101.2	102 2	104
5th Day	9 am	103.8	106.4	100.6	101.8	102.4
	12 n	104.4	106	100 8	101.3	104.4
	3 pm	105.2	106.4	101.4	102 3	104.4
	6 pm	104 2	106.7	102.7	102.9	105
	9 pm	102	106 1	102.5	102.4	104.8
	12 m	101.7	106.1	101.5	101.6	103.8
	3 am	101.5	105.8	.....	101.4	102.9
	6 am	101.2	105.1	100.2	100 8	103.8
6th Day	9 am	101 6	107	101.4	101.2	104.7
	12 n	101.3	107	101.9	101.2	104.6
	3 pm	101.9	107	103	101 3	104.2
	6 pm	101.9	106.4	103.6	102	106.4
	9 pm	101.2	106.3	102 5	101.6	104.9
	12 m	101.9	106.1	....	101.3	105.4
	3 am	101.7	105.8	.....	....	104.4
	6 am	101	105.8	.....	100.8	103.8
7th Day	9 am	101.8	106.3	.....	101	102.6
	12 n	101.5	105.8	.....	.....	101.3
	3 pm	101.5	105.8	.....	....	102 5
	6 pm	102.1	106	.....	.....	103 5
	9 pm	.....	105.8	.....	.....	103.8
	12 m	.....	105.8	.....	.....	103.4
	3 am	.....	105.4	.....	.....	103
	6 am	....	104.4	.....	....	100.6
8th Day	9 am	101.4	104.4	.....	.....	101 7
	12 n	100.5	103.9	.....	.....	103
	3 pm	101.4	103 4	.....	.....	104.8
	6 pm	101.2	102.1	.....	.....	104.1
	9 pm	.....	102	.....	.....	103.2
	12 m	.....	101.2	.....	.....	103
	3 am	.....	100.2	.....	.....	102.6
	6 am	.....	101	.....	.....	102.2
9th Day	9 am	.....	99.7	.....	.....	102.4
	12 n	.....	100.3	.....	.....	104.8
	3 pm	.....	101.2	.....	.....	105.6
	6 pm	.....	101.3	.....	.....	105.4
	9 pm	.....	101	.....	.....	104.8
	12 m	.....	100.6	.....	.....	103.6
	3 am	.....	100.8	.....	.....	.....
	6 am	.....	100	.....	.....	101.3
10th Day	9 am	.....	100	.....	.....	101.8
	12 n	.....	101	.....	.....	101.2
	3 pm	.....	102 2	.....	.....	103.1
	6 pm	.....	102.2	..	.....	103.4
	9 pm	.....	101.5	....	.....	105
	12 m	.....	100.8	....	.....	.....
	3 am	.....	.....	.....	.....	.....
	6 am	.....	.....	.....	.....	.....
11th Day	9 am	.....	.....	.....	.....	103
	12 n	.....	.....	.....	.....	104.8
	3 pm	.....	.....	.....	.....	105.6
	6 pm	.....	.....	.....	.....	105.4
	9 pm	.....	.....	.....	.....	.....

SECONDARY FEVER PERIOD

		No.	66	68	69	70	74
1st Day	10 am	102.2	102 4	101.5	102.6	103.2
	2 pm	.....	.....	103.9	.....	.....	.....
	6 pm	104.2	104 6	104.6	101.4	105.2
	10 pm	.....	103.2	.....	.....	.....	.....
2nd Day	2 am	.....	.....	.....	105	.....	.....
	6 am	105.2	101.4	.....	105	103.4
	10 am	104.2	.....	104.2	104.5	104.3
	2 pm	105.4	.....	105.6	103.8	104.6
	6 pm	105	....	105 6	103.8	105.4
	10 pm	102	106.2	106.2	105.2	104.8
3rd Day	2 am	.....	103	..	104	104.6
	6 am	102.4	102	105.4	103.4	103
	10 am	104.2	105	106.5	103	103 2
	2 pm	105.2	104.2	106.4	104.7	104.6
	6 pm	105.5	104.6	106.5	103.8	105.2
	10 pm	104	103 2	106	103.8	106
4th Day	2 am	105	104	106.2	103.2	104.8
	6 am	.....	102.8	.....	103	103.2
	10 am	105.1	103	106.4	104	104.2
	2 pm	104.4	104 6	105.7	104	104 4
	6 pm	105.2	105.6	105.7	104.6	105.7
	10 pm	105	104 2	105	103.6	104.6
5th Day	2 am	105.4	103.8	105	103.2	104
	6 am	105 1	103.8	104 4	101.8	103.4
	10 am	104.4	103.3	106.3	102.2	103.3
	2 pm	105.8	105	105.6	102.7	104.6
	6 pm	105.6	105.2	104.8	103	105
	10 pm	105	104.6	104.4	102.6	104
6th Day	2 am	105	104	105	...	104.4
	6 am	104.6	103 4	104	101.2	103
	10 am	105.4	104.2	104.8	.....	103.5
	2 pm	105.7	104 6	105.4	.....	104
	6 pm	106.2	104 6	106	.....	104.3
	10 pm	104.4	103.8	104	102	103.2
7th Day	2 am	105.2	103.8	105	101 8	103.2
	6 am	104	104	104	100 2	102.4
	10 am	104.1	104	105.1	102	102.7
	2 pm	104	104 8	104.6	101.2	103.6
	6 pm	104.7	104 6	105.6	102.2	104
	10 pm	104	104.1	104.4	101	103.4
8th Day	2 am	103.6	103.2	105	101 6	.....
	6 am	103.6	103	105.6	100.4	101 4
	10 am	103 2	103.2	105 2	102.6	.....
	2 pm	103.6	103.7	105.6	101.4	.....
	6 pm	104.2	104 2	106	101.8	.....
9th Day	10 pm	104	102 1	105.3	102	.....
	2 am	103 6	101 6	104.6	101	.....
	6 am	102.4	101.6	104.4	99	.....
	10 am	102.6	101.6	104.7	100.4	.....
	2 pm	102.5	102	104	101.2	.....
	6 pm	102.7	102 6	105.6	101.2	.....
	10 pm	103.4	102	105.6	101.4	.....
10th Day	2 am	103	101.5	104 4	101.1	.....
	6 am	102.4	100.6	104.6	100 3	.....
	10 am	102.6	101.6	104 4	99.6	.....
	2 pm	102.4	101.8	103.8	100.6	.....
	6 pm	102.6	102.6	105.4	100.8	...
11th Day	10 pm	103	.....	104.8	100.8	.....
	2 am	.....	.....	104 2	102 4	.....
	6 am	.....	.....	102.8	101	.....
	10 am	.....	.....	104.2	101.6	.....
	2 pm	.....	.....	106.2	104.2	.....
	6 pm	.....	...	106.6	103.6	.....
	10 pm	.....	.....	104.8	103	.....
12th Day	2 am	.....	.....	104	.....	.....
	6 am	.....	.....	102	.....	.....
	10 am	.....	.....	103.7	.....	.....
	2 pm	.....	.....	103.6	.....	.....
	6 pm	.....	.....	104.5	.....	.....
	10 pm	.....	.....	104 2	.....	.....
13th Day	2 am	.....	.....	103.4	.....	.....
	6 am	.....	.....	102	.....	.....
	10 am	.....	.....	104.2	.....	.....
	2 pm	.....	.....	104.5	.....	.....
	6 pm	.....	.....	104.7	.....	.....
	10 pm	.....	.....	103.4	.....	.....
	2 am	.....	.....	.....	.....	.....
	6 am	.....	.....	100.8	.....	.....

There has been no further trouble with fever. Bull 68 died January, 1901, of blackleg.

Lot II consisted of six Shorthorn heifers and one bull. The heifers ranged in age from 11 to 16 months and the bull 5 1-2 months. These cattle were all in good flesh and in perfect health.

Each received 1 c. c. of blood December 31st, 1900. The six heifers fevered at the usual time, but not severely except in one. After fifty days four of them received a second dose of blood. Three of the four fevered sharply from this eight days later. One passed red urine, but recovered. The one which fevered so verely from the first dose refused to eat for several days. We gave cathartics which acted regularly and she became thin and seemed to stop growing. After some weeks she slowly improved.

The young bull acted in a very unusual way. He had a nurse cow and kept in good fix. He was inoculated five times in all, viz: December 31, 1 c. c.; January 25, 1 c. c.; February 20, 2 c. c.; March 18, 2 c. c., and April 20, 2 c. c. During the 141 days this calf was on clean grounds no prolonged fever spell occurred. We found occasionally a moderate fever for one day at a time, the highest of which was 104 degrees. No outward signs of sickness were visible at any time.

On May 20, he was turned out in pasture with Texas cattle and ticks. This produced a fever on June 11th, 12th and 13th, which was never found above 105 degrees. The conclusion arrived at in this case was that the calf was so well nourished that his system was able to keep the disease in check. This calf gained 350 pounds while at the Station. He was shipped to the ranch July 6th and has since showed no signs of fever.

Woods. Twenty Shorthorns and Herefords.

This lot consisted of twenty animals from Missouri. They were mostly Shorthorns, the remainder were Herefords. They varied in age from 8 to 24 months. March 30th each received 1 c. c. of blood. Fever appeared promptly on the ninth day and four of the heifers passed red urine. The bulls did not show fever so much. We gave the sick ones salts.

April 20th.—The cattle have done well except two which died from the inoculation fever. We now have them on the ranch. No deaths were reported from this time.

Weddington. Twenty five Herefords.

This lot consisted of fifteen bulls and ten heifers. All were raised in Childress county, Texas. Their ages ranged from 8 to 12 months. Five of the bulls were inoculated February 28th, 1900, and ten bulls and ten heifers on March 14th, 1900. The blood used in this case was from a 2-year-old steer that had been raised in Wise county and had been above the quarantine line about a year. It is of interest to know that the blood was still virulent. The animals were fed crushed kaffir corn and wheat bran and sorghum hay. After some days cotton seed meal was added. The primary fever appeared quite promptly in all the animals, though it was quite mild in two or three of the bulls.

Heifer No. 2 fevered on the eighth day and continued ten days. The temperature was never found above 105.6, yet she died on the eighteenth day after inoculation. A post mortem examination

showed the typical lesions of Texas fever except the urine was not bloody. The secondary reaction appeared about the thirtieth day and continued ten to fifteen days. In two of the bulls it was very feeble. In bull 82 it did not appear until the thirty-eighth day and continued eighteen days. Bull 85 showed a marked third reaction from the fifty-seventh to the sixtieth days.

May 22, 1900.—The cattle were shipped south into Clay county.

June 30th.—The heifers have made good growth and are taking on flesh. The bulls are doing equally well except three which are still sick and weak.

August 23rd.—There has been no sickness among the inoculated cattle except one bull, which recovered.

November 20th.—There have been no deaths among the inoculated cattle, but three of the bulls have not made a satisfactory growth and have been thin and weak all summer and fall.

December 21st.—About November 1st we sent several of the bulls to Refugio county, and they all fevered and one has died. They were evidently not entirely immune.

Wood. Fourteen Sussex.

This lot consisted of eight heifers and six bulls. All were raised in Tennessee and were inoculated with 1 c. c. of blood each December 18th, 1899, at Victoria, Texas. Fever appeared in all of the calves from the tenth to the fourteenth days, ranging from 104.2 to 106. They did not care much for grain and refused green rye entirely. They all recovered promptly and no more fever until the twentieth day. From this until the twenty-ninth day they all had secondary fever. We found bull 1, 107.4; bull 2, 105.4; bull 3, 106.8; heifer 1, 105.4; heifer 2, 106.6; heifer 3, 105.8. Heifer 4 had secondary fever from the thirty-fourth to thirty-seventh day ranging from 104.2 to 106. Heifer No. 5, 104.6; heifer No. 6, 105.

A well defined third reaction appeared in each of these calves from the forty-fifth to the fiftieth days. In bull 3 this reached 106.4 on the forty-fifth day.

During the fever stages we gave cathartic medicines. The heifers stood the fever better than the bulls.

During the month of May all of the calves carried ticks without conspicuous sickness. They were fed bran and a little cotton seed meal.

During the remainder of the summer the calves did quite well. One heifer died of blackleg, one died in calf birth and another was killed by a falling shed. The remainder have made a satisfactory growth and have done better than native cattle.

First inoculation March 18th, dose 1 c. c.; second inoculation May 23rd, dose 1 c. c.

TABLE IV SHOWING THE DURATION AND SEVERITY OF FEVER FOLL

EXPLANATION.—2.4 reads 10

Day of Experiment ☞			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
			MARCH														APRIL																																	
Day of Month ☞			18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4
Tag No.	ANIMAL	Age								Primary Fever Period																							Secondary Fever Period																		
1	Red Poll Heifer	13 mos.	1.2	1.2	2	0.4	0.6	1.6	1.2	1	1	2	1 2	3	1	1.2	1	1	2	1	0.6	1	0.6	1.4	0.6	0.6	1	1.2	1	2.2	1.8	4.7	5	6 2	5.7	5.6	5	5.6	5.2	5.4	4.2	4.2	2.8	3	4	1	2	2	2.8	2
2	Red Poll Heifer	15 mos.	2.4	1.4	1.8	2	2.6	2 1	2.2	1.2	2	2	1.6	4.7	6.7	6	2.8	1	2.6	3.1	4	4.8	4.4	3.4	2.4	1.6	2.2	2.4	2.4	2.4	3.2	3.2	4.2	4.4	4.6	5	4.6	4.2	3.8	4	4	2	2	2.2	2	2.2	2.2	2	1.4	1.8
3	Red Poll Heifer	14 mos	2	2	1.4	0.4	1	2	1.6	3	1.6	3.4	2	5	1.4	0.6	1.6	1.8	1.6	0.6	1.2	1	1.1	0.4	2	1.6	1.6	2.1	1.8	2.4	3	3.6	4.6	6	7	5.8	4	3	4.2	4	3	4	4	3	3	1 8	2.6	2.2	1.4	2.6
4	Red Poll Heifer	11 mos.	2.4	1.4	2	2.4	1.4	2	1.4	2.4	2.4	3.8	4.2	4	4 6	2 7	3	3.8	4	3	3.4	2.6	2	2	3	2.2	3.4	2.1	2.6	5.1	3.4	4.4	4.6	5.1	6	6.4	5	3.4	4.4	5	1.8	1.4	2	2	1.6	1.8	3.6	3.8	4	2.6
5	Red Poll Heifer	11 mos.	1.2	1.2	1.4	0.2	0.4	1.4	2	1.4	2	6	6	6	4.6	5.7	5	3.6	3	1.6	1.4	2	2.4	2.7	1.5	2.4	1.6	1 8	2	1	2	2	3	4.2	5.5	5.4	5	3	2 6	4.2	5	3.2	3.2	3	2.4	2	3.2	2	2	2
6	Red Poll Heifer	11 mos.	2	1.6	2.2	1.4	1.2	1.6	1.6	1.6	2 4	2	1.6	4.2	4.4	3.6	5	2	3	2.2	[illegible]	2.6	2	1.6	1.6	2	2	2 8	3.4	2.6	3.6	3.4	4.6	4.6	6.2	4.6	5	4.1	5	4	3.8	2.4	3.4	2.4	2	1.4	1.4	1.6	1.6	2
7	Red Poll Heifer	10 mos.	2.6	2.6	2	2.7	2	2.2	2.4	4.4	3.4	4.6	3.6	2.2	3	3	2	2.4	4	4	3.6	2.6	2.4	2.2	0.8	2.2	2.6	3	5	4.6	3.6	4.6	3.4	4	3.1	2.6	3.6	2.4	3	2.6	3	2	2.4	2	2	2	3 8	1.6	2.6	3
8	Red Poll Heifer	12 mos.	2	1.1	1	1.4	1.6	2	1.6	1	1.6	2	1.7	2.6	4 4	4.4	1 4	1.6	2	1.6	1.6	1	1.2	1.6	0 8	0.6	2	2	1.6	2.6	4.7	1.6	2.6	4.2	3.2	4.2	4	2.6	2.6	....	2	1	1.8	2	1.1	1	2	0.8	1.2	1.2
9	Red Poll Heifer	8 mos..	2.4	2.6	2	1.4	1.6	2.8	2.6	3.6	2 6	2	5.3	4	3	3	4	4.4	3	2.3	2.6	2	2 4	2	2	3	2	3.6	3	2.4	3	2.4	3.4	4 2	4.4	3.4	2.6	2.6	3	3	2.4	2	2.4	2	2.6	2	4	3.6	3	3
10	Red Poll Heifer	8 mos..	3	2.4	1.4	1	2	3.2	2.6	2	2.4	2	2.7	2.6	2.7	2.4	2	3	4	4.6	3	3	2.6	1.3	0.8	1.6	2	3 2	3	3.2	3.6	4	2	3	3	2.4	2.6	1.7	2.4	2	1	2.4	1	1.2	2.2	1.4	2	2	3.2	3
11	Red Poll Heifer	7 mos..	2.2	2	2.4	0	1.4	2	2	1.2	2.2	1.8	2	2	2.6	2	2	3.6	4.6	6.1	4.1	2 6	2	1	1.6	1.2	2	1.6	1.6	1.4	2	2.6	5.4	4.7	4	3.8	4	4.4	4	3.8	3.8	2.6	2.8	3	2.8	2.1	2	2	1.4	2
12	Red Poll Heifer	10 mos.	2.6	2.5	2.4	3	2.3	3.4	2.4	2.4	2.4	2	2	2.4	2.6	2.2	4	6	2.6	2.1	3	3.2	3	2	2	2.4	2	3	3	2 6	4.2	4	4.7	5	4.2	5	5.8	4.6	4.6	5.2	3.4	1.6	4	3	3.6	3	3.4	2.6	2.4	4
13	Red Poll Heifer	8 mos..	2.4	2	1.6	1.6	2	3.2	3	2	2.1	2.4	2.2	3	3.4	3.6	5	5.4	4.6	3	2.6	2	2	1	1.2	1.4	1	2.1	2	1	2	2.1	3	4	4.6	4	5	4.2	4.4	4.2	4.2	2.4	2.4	3.4	2.4	3.8	1.6	2.8	1.6	2.6
14	Red Poll Heifer	10 mos.	3.4	3.2	1.4	1.7	2	3.6	2.2	2.4	3	3.6	2.4	2.4	2	3	2	3	1.6	1.3	2.4	2	2	2	1.2	3.6	2.4	3	2.2	3.8	2	2.1	2.6	3	3.2	2.4	4	3.4	4	4	3	3.8	3	3.6	5.6	4.4	5.7	5	3.6	3.2
15	Red Poll Heifer	... ...	2.4	2.2	1	0.2	1.6	2	1.4	1	1.4	1.2	2	1	2.6	2.2	2	1.6	1	3	2.4	0.4	1.6	1.4	1.6	1.2	1.4	1.6	2.2	0.6	2	0.6	1.6	2	4.4	5.6	4	4.4	3	3.1	2.1	2.8	3	3.1	3	2.8	3	2.2	2.2	2.6
16	Red Poll Heifer	15 mos.	2 2	2	1.8	1	1.8	2	1.6	1.4	1.4	2.4	4	3.7	5	4	4.8	5.3	0.4	2.[illegible]	2	1.1	2.6	2.2	1	1.4	2	2	3.2	2.4	4	2	4.6	3.4	6	4.3	7	2.4	3.6	2.2	2.6	2	2.4	1.8	3.4	2.4	1.4	1.6	2	1
17	Red Poll Heifer	19 mos.	3.6	1.6	2	0.6	1.8	1.2	2	1	1.8	2.4	1	1	1.4	2.4	0.7	1.6	2.2	1.[illegible]	1.4	0.4	1.5	1.1	1.4	1.4	2.4	2.6	2.7	4	3.6	4	3.6	5.7	5	5	5	4	3.4	4	3.8	2.7	3.8	3	3	2.2	2	1.4	2.8	1.4
18	Red Poll Heifer	11 mos.	3	2.6	2	2	1.4	2.6	2.6	2	2	2.4	3.2	2.4	2.8	2	4.2	2	2.6	3.[illegible]	3.7	3	2.4	2.2	1.4	1	2	2	3.4	2.6	6	5.1	4	4.8	5.4	4.6	3.6	4	5.5	3.6	2.6	3.4	2.2	4.6	2	2	1.8	2.8	2.2	3
19	Red Poll Heifer	17 mos.	2.4	2	1	0	2	1.6	1	3	1.2	3.6	3.4	0.7	1.6	1.4	2.4	1.6	5.2	5.[illegible]	3.4	4.7	5.1	2.4	1.6	2	2	2.2	2.8	2.6	3	3.6	4	5	4.3	4.6	4.4	6	5	4	4	3	3.2	1.6	3	2.6	2.6	2	1.4	2
20	Red Poll Heifer	9 mos..	3.2	2	2.4	2.2	1.4	2.6	2.4	3	3.6	2.7	2 6	4 4	4.6	4.2	4.2	3.6	4	2.[illegible]	3	3.1	3	5	3.3	3.6	3.2	2.3	2	3.2	2	4.2	4 2	4.2	4.7	4	4	3.2	3.4	3 4	2.6	3.6	5	3	3	2.6	2	3	2.4	3.1
21	Red Poll Heifer	12 mos.	2	2.1	1	0.6	1.4	2	2	2	2	2.6	4.7	2.6	2.4	1.8	5.6	3.6	3	4	4.2	3	1.1	1	0	1.2	2	2	1	0.7	1.4	3	2	3.1	3.4	4.6	1.6	5	4.4	2.6	3	2.4	2.6	2.6	3.2	3	2	1 6	1.2	2
22	Red Poll Heifer	13 mos.	2.1	2.2	2	1	2	3	2.4	2	2	2	2	5	5	6 8	4	2.8	2.2	2.[illegible]	2	2	2.6	1.2	1.8	2	2.4	2	2	1.2	1.6	2	2	4.4	3.4	5	5.4	4 4	6	3	2.4	3.2	3	2.4	2.4	3.4	2.6	2.4	1.6	2 2
23	Red Poll Heifer	8 mos..	2.6	3.2	2	1.7	2.1	3	2.2	2.6	4	4	5	4	5.4	2	2.7	1.4	2	1.[illegible]	1.6	2	2.2	2	1.4	1	3	3.4	2.4	1.2	2	2	2	3	3	4.6	4	3.4	3.8	3	2.4	2.6	2.4	2	2	2.6	2.6	3	2	2.6
24	Red Poll Heifer	12 mos.	3	2	2	2	2.2	2	2	1.6	2.4	4	6	2.6	2.3	3.3	3 8	5	4	1.6	2.4	1.2	1.2	1.2	0.6	1.1	2.2	2	2	2	2	2.7	2	4.3	3.6	3.4	2.1	3.1	...	3	2.7	3.4	2.8	2.8	1	2.4	2.1	2	1.8	2
25	Red Poll Heifer	12 mos.	3	2.1	1.4	2.4	1.4	2.6	2	2	1.4	3	5.8	3 6	5	2.6	1.6	2	2	1.1	1.6	2	2	1	0	1.6	1	2	1.8	1.8	2	5	2.2	4 4	5.2	4	3.4	4.4	3.6	3.4	3	3	4	3	1.4	2.8	2	1.2	1	1.4
26	Red Poll Heifer	12 mos.	2.4	2.4	1.8	1.6	2.6	2.6	3	1.6	1.4	3	5	4	6.6	2	1.8	1.2	1.4	1	1.4	1.2	1.6	0.8	1.2	1	2	2.1	1.4	2.4	1.4	4	2.2	4	3.8	4.6	3.1	2.6	3.1	2.8	2	2.1	3 4	1	2 6	2	1.8	1.2	1.4	1.6
27	Red Poll Heifer	9 mos..	2.8	2.4	2.2	2	2.4	2.4	2.4	2.4	2.2	3.8	3.4	5	4.2	3	2	3.2	1.6	2[illegible]	2	1.7	2	1.6	1.6	1.4	1·4	2.4	2	2.4	2.4	3.6	4	5.2	4.2	3.4	4	4	3	2.6	2	2	2	2	2.2	2	2 6	1.7	2.6	3
28	Red Poll Heifer	8 mos..	4	3	2.6	1.6	2.7	3.4	2.4	3.4	2.1	3	2.6	2.6	2.4	2.3	2	2.2	2	2[illegible]	2.3	2.2	2	2.4	2	2.1	1 6	1.8	2	1.6	2.6	2.6	3	3.4	3.7	4	5.1	6	6	6	3.1	4	4	3.2	3.1	3	2.6	2.6	2.2	2.8
29	Red Poll Heifer	11 mos.	3.2	3	2.6	5	4.2	5	3.6	3	3.4	2.4	2.7	2.6	2	3.2	2.4	3	2.6	[illegible]	2.6	2	1.6	1.6	0.4	1.4	2	1.4	1.4	1.4	1.4	2.1	2.4	4	3	2	2.4	2.1	1.6	2	2.4	2	2	1.4	2	1.2	2.6	1.4	1.4	1.4
30	Red Poll Heifer	13 mos.	2.1	2.6	2.4	2.3	2.8	2.4	2.2	2	3	3.1	3.6	5	6	5.2	2	3.4	3.7	[illegible]	2	1.6	1	2	1	2.4	2.2	2.2	2.6	1.2	2.2	2	3	2.6	2.4	1.6	3.4	2.6	1.6	5 8	5 8	4	4.4	3.2	3	2	1.6	2	2.2	2.1
31	Poll Durham Heifer	13 mos.	2	3	2.6	1	2.4	2.6	2.6	1.4	1.6	2.2	3	1.6	2	2	1.7	2.4	1	[illegible]	3	0.3	2	1.6	1	3	2.6	2.6	2.4	3	3	5.3	5	5.2	5.1	6.2	5	5.2	5	5	5.3	2.4	3	2	2.6	2.8	3.6	2.2	2	4
32	Poll Durham Heifer	12 mos.	1.6	2	2.6	1.1	2	2	2	2.2	5.2	3.6	1.7	1.4	4	5	5.1	5.1	5.4	[illegible]	0.6	1	1.6	0.8	1	2	2	3.2	2	3	3.7	3	5	5.2	5	5	4.6	4	4.6	4.4	3	2	2.2	1.4	2.8	1.4	2	1	3.4	2
33	Poll Durham Heifer	12 mos.	2	2.1	1	1.2	1.8	2	2	1.7	1.7	4	6	1.4	1.4	3	2	2.4	3	[illegible]	2.4	3	1	2	1	2	2	2	1.6	2.2	2.8	1	4	4.4	6	5.1	6	5	6.2	4.1	4	3.1	3.3	3	3.4	2.4	4	4	2.6	1.7
34	Poll Durham Heifer	11 mos.	2.6	1.8	2.6	1 6	2.8	2	2	1.4	2 4	5.2	4	2	2	1.2	1.7	2	2	[illegible]	1	3	2	2	1	3.4	3	5.6	5.2	5.2	4	3.6	3.2	4.7	2.4	4.4	5.1	2.1	3	2	2.2	1.6	2.6	2	2.4	3	4	2.1	2	2.8
35	Poll Durham Heifer	12 mos.	1	1	1.6	0.7	2.4	2.4	2	1.6	2.2	2	2	1.4	2.3	1.6	1.6	1.2	1.4	[illegible]	2	2.4	2	1.1	1.6	1.4	2.2	5 4	3	5	4	4	4	5	4	4.6	4 4	4 6	5	4	3.2	3.6	2.4	2.4	2	2.2	2	2.6	1.6	3 4
36	Poll Durham Heifer	13 mos.	2.6	1.6	2	3	2.6	5.4	3	2.6	2.8	3	3.7	2.4	2	1.7	1.2	2	2.4	[illegible]	1.6	1	1.6	1.8	1.4	2.1	3	4.2	5	5	4.6	4	4.6	4.4	4.4	4.6	4.6	4	5.8	3.6	4.2	2.6	2.8	1.6	2	6.4	1	1	5.4	2.5
37	Shorthorn Heifer	12 mos.	2.6	1.8	1	0.4	1.8	3	3	3.4	2.4	2	2	1.7	5.8	4	4.4	3.6	3.3	3[illegible]	1.6	1.3	1.6	2	1.4	1.2	1	2	3.6	3.8	3.6	4.7	4	4.2	4.2	3.4	3.6	2.8	3.1	2.4	2.2	2.4	1.6	2	....	2	1.4	1.6	1.6	1.8
38	Shorthorn Heifer	11 mos.	4	4	2.6	1.6	2.4	3	2.6	2	2.2	3	2.6	2	2	2.6	2.6	1.4	2	2.[illegible]	2.1	2.2	2.6	1.6	2.4	2.2	2	3 6	2.4	2	2.4	3.2	3	2.6	2.8	2.4	2.4	2 2	2.6	2	2.8	1.2	2	2	2.4	1.4	3	2	2	2
39	Shorthorn Heifer	11 mos.	2.4	2.1	2.1	0.6	2.6	3.1	4	3	2.6	2.4	4.2	5	6.3	6.4	4	2	2.7	3.[illegible]	2.4	2.1	2.1	1.4	1.2	2	1.4	2.8	2	1.6	2.6	1.6	1.6	3.8	4.4	4	4.2	5.2	4.6	5.1	5	4.2	4	3.4	3.2	3	2.4	1.7	1.8	2
40	Shorthorn Heifer	17 mos.	2.2	2.4	2	1.2	2.4	2.4	2 4	1.4	2	2	2.2	4	5.2	5.6	4.2	2.4	1.7	3	2	1.6	3	2	2	2	1	1.6	2.4	3.2	3.4	2 6	5	4.6	6.2	3	98	De	ad.	Sec	ond	fev	er.							
41	Shorthorn Heifer	12 mos.	3.2	2.4	2 6	2	3.6	4	6	2	3	2	2.4	5.2	4.8	4	4.6	4.3	3	2.8	4	3.2	3.4	2	1.7	3.3	2.6	3	2	2.3	2.4	5.2	3.6	5 2	6	5.5	5.7	7	4.4	3.7	4.2	3	3	3	2.4	5.4	3.6	2.2	2	2
42	Shorthorn Heifer	11 mos.	2	2.4	1.6	1.6	2.2	3	2.4	1	2	2.7	6.3	3.6	5.2	5.8	2.6	3.6	1.4	1	0.6	5	1.6	1	1	1.3	2 6	3	2.2	1.6	3.2	1.8	3.6	4	6	4	4.4	2.4	...	3.4	3	3	2.2	2	2.4	2.6	4	3.8	3	2
43	Shorthorn Heifer	12 mos.	4	2	2.4	2	2	3	2.8	2.4	3	2.4	2.6	2.4	2.6	2	2	2.2	1.8	2	[illegible]	2.4	2.1	1.3	1	2	2.4	2 4	1.4	1.6	2.6	2.4	3.6	5	4	6.4	6	4.6	5.2	5.2	5	De	ad.	Sec	ond	fev	er.			
44	Shorthorn Heifer	17 mos.	2.8	2.4	1	2	2.4	2	2	2	1.4	2	5.8	3.4	4.2	4	3.4	3.4	5	[illegible]	[illegible]	De	ad.	Int	ern	al	He	m o	rrh	age.																				
45	Shorthorn Heifer	9 mos..	2.6	2.4	1.4	3.6	3.6	2.4	2	1.6	1.6	2.2	2.2	2.3	3	1.1	2	2.3	2	2	[illegible]	1.6	2.1	2.4	1.4	2.2	1.6	3.4	4.2	4.2	5.2	5.6	4 7	5.4	3 4	4.2	3.6	3.6	4	2.6	2.7	2.4	2.4	2.2	2.2	2 1	2.1	2.8	2.7	3
46	Shorthorn Heifer	11 mos.	2.6	2.2	2.6	2.1	2.4	3.4	2	2.2	2	5.1	5.6	5	5.8	3	4.4	2.6	2.1	3	2 6	2	3.4	2	1.3	2.2	2	2	3.8	2	3	2.2	4 4	5	6	5	5.4	4.4	5.1	4	3.8	3.4	3.8	2.4	3	1.6	2.2	4	4	3.4
47	Shorthorn Heifer	17 mos.	4	3.4	2.6	2.7	3	3.6	3.2	2.4	2.2	3.6	2.4	2.1	2.2	2.4	2.2	3	3.2	2.2	3	4	3	2.2	1.6	1.4	2	2.6	2.6	2	3	2.4	2.4	3.6	2.8	2	2.4	2.2	2 6	3	2.2	2	2	1.6	3	3.2	3.8	2	3.2	2.2
48	Shorthorn Heifer	9 mos..	3	4	1	1.2	1.6	3	2.4	4	2.2	5.6	4.4	4	3	1.6	2.6	2.2	2	2.4	2.2	2	2.1	2	2	2.6	2.6	3	3	4.4	5.3	5.2	5.4	5.7	5 6	5.7	3.6	5	4.4	2.7	3	4	2.7	2.4	3	2.8	3.4	2.6	2.6	2.1
49	Shorthorn Heifer	11 mos.	2.6	2.6	2.1	1.4	2	2.4	3	1.6	1.7	3.1	2.2	2.2	2.6	2.2	2.4	2	3	2.2	2	1.1	1.6	1.6	1.6	2	2.2	2.8	2	2.4	2	2	3	3	2	4	4.6	4.6	5.2	5.6	4.8	3.1	De	ad.	Ur	ine	cle	ar.		

SEVERITY OF FEVER FOLLOWING TWO INOCULATIONS WITH INFECTED BLOOD.

EXPLANATION.—2.4 reads 102.4 degrees F.

42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
			MAY											
28	29	30	1	2	3	4	5	6	7	8	9	10	11	12
3	4	1	2	2	2.8	2	1.2	1.6	1	1	1	1	1.2	2.6
2.2	2	2.2	2.2	2	1.4	1.8	1.6	1.8	2.6	1 4	1.4	2	1.4	2
3	3	1 8	2.6	2.2	1.4	2.6	2	1.4	2.4	1.4	1.4	1.2	1.2	1.6
2	1.6	1.8	3.6	3.8	4	2.6	2.1	1	1.4	1.4	2.2	2	1	1.4
3	2.4	2	3.2	2	2	2	1.4	1.2	1	1	1.4	1.4	2	1.6
2.4	2	1.4	1.4	1.6	1.6	2	0.8	1.4	1	1.4	1.7	1.6	1	2.1
2	2	2	3 8	1.6	2.6	3	2.2	3	2	2.2	1.8	2.2	2.4	2.4
2	1.1	1	2	0.8	1.2	1.2	1.2	1	1.4	1	1.8	1.7	1.8	1.4
2	2.6	2	4	3.6	3	3	2	3	2	2.2	2.6	2.6	2.1	2
1.2	2.2	1.4	2	2	3.2	3	3.4	2	4	1	2	2	1.4	2
3	2.8	2.1	2	2	1.4	2	1.6	2	1	1.6	1.2	1.4	2.4	2
3	3.6	3	3.4	2.6	2.4	4	3.4	2.6	1.8	2.8	2.4	2.4	2.6	2.6
3.4	2.4	3.8	1.6	2.8	1.6	2.6	2.6	3.4	3.4	2.1	2.4	1.8	1.6	0.8
3.6	5.6	4.4	5.7	5	3.6	3.2	4.6	2.6	2.6	2	2	2.4	2.2	2
3.1	3	2.8	3	2.2	2.2	2.6	1.4	1.4	1.2	1.6	1.2	1.8	2	2
1.8	3.4	2.4	1.4	1.6	2	1	2	1.6	1.4	1.2	1 1	2	3.6	1.4
3	3	2.2	2	1.4	2.8	1.4	1	1.2	1	1.4	0	1	1	1.4
4.6	2	2	1.8	2.8	2.2	3	2.4	3	3.4	1.6	1.4	1.4	1.4	1.8
1.6	3	2.6	2.6	2	1.4	2	1.6	2.2	1.6	2.4	1.5	2.6	2.2	1.7
3	3	2.6	2	3	2.4	3.1	4	4.4	4.6	4.6	2.4	2.1	2.2	2.7
2.6	3.2	3	2	1.6	1.2	2	1.8	1.7	2.4	1.8	1	1.4	1	1.4
2.4	2.4	3.4	2.6	2.4	1.6	2 2	1.8	2.2	1.4	1.4	1.6	2	0.8	1
2	2	2.6	2.6	3	2	2.6	2.6	2	2.4	4	3	2	2.2	2
.8	1	2.4	2.1	2	1.8	2	1.8	2.4	2.8	3.2	3	4.2	3	2.2
	1.4	2.8	2	1.2	1	1.4	1.4	1	0.8	1.4	1.2	1.4	1.4	2
	2 6	2	1.8	1.2	1.4	1.6	1.6	2.2	1.4	3.8	1	1.8	1.6	1.6
	2.2	2	2 6	1.7	2.6	3	2	3.4	2	3.6	3.2	2.3	2.6	4
.2	3.1	3	2.6	2.6	2.2	2.8	3.4	3.2	2.8	3.6	2.6	3.2	3.6	2.4
.4	2	1.2	2.6	1.4	1.4	1.4	1.2	1.6	0	1.6	1.4	2.4	1.6	1.4
.2	3	2	1.6	2	2.2	2.1	3.6	2	1.2	2.4	2	2	2.2	2
	2.6	2.8	3.6	2.2	2	4	1	1.7	2.2	3.6	1.6	2.2	1.6	1.8
.4	2.8	1.4	2	1	3.4	2	3	3.2	2.6	3.4	3.5	3.4	2	2.2
	3.4	2.4	4	4	2.6	1.7	3	2	1.6	1	2.2	1.6	2	2.2
	2.4	3	4	2.1	2	2.8	2.4	2	2.4	2	1.1	2.2	2	1.4
.4	2	2.2	2	2.6	1.6	3 4	2.8	3.4	2.4	2.4	2.1	2.4	2.4	2.2
.6	2	6.4	1	1	5.4	2.5	4.2	3.4	2.4	2.4	2.6	1.4	2	1.2
	...	2	1.4	1.6	1.6	1.8	2.8	3 8	4	4	3.4	3 4	3.2	2.2
	2.4	1.4	3	2	2	2	2	2.4	2	2	1.8	2.2	1 8	2.2
.4	3.2	3	2.4	1.7	1.8	2	1 6	2	2	2.1	1 8	2.4	2 2	2.6
	2.4	5.4	3.6	2.2	2	2	2.4	2	2.6	3	3.8	3.6	3.4	3
	2.4	2.6	4	3.8	3	2	2 1	1.4	2	2	1.4	2.4	2.6	2.2
ec	ond	fev	er.											
.2	2.2	2.1	2.1	2.8	2.7	3	2.8	2.2	3.4	3.2	3	4	3.2	3.4
.4	3	1.6	2.2	4	4	3.4	2.2	2.7	3	2.4	2	1.4	2.2	1.8
.6	3	3.2	3.8	2	3.2	2.2	2.6	2.3	3	3	2	2	2.6	2
.4	3	2.8	3.4	2.6	2.6	2.1	3.8	3	3	3.8	4.6	3.4	3	2.8
.	Ur	ine	cle	ar.										

57	58	59	60	61	62	63	64	65	66	67	68	69	70	71
13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
										* Second Inoculation. 1 c. c. of Blood.				
1	1	0.6	2	1.6	1.2	1.6	1.4	2	2.2	3	3.6	4.4	2.2	1.6
2 1	3.2	2.4	3	3	4.2	4.8	4 8	....	2	2 2	2	1.2	2	2
1.6	1.6	2	2	2	1.8	1.6	1.8	....	1.4	1.6	1.2	1.4	1	. .
1.2	1.6	1.2	1.6	1.4	1.6	1.4	2	1.4	2.2	1.8	1.6	1.4	2	1.8
1.6	2	2 8	2.4	1.4	2.2	2	2	1.8	1.6	1.4	1.6	1.2	0.6	1.2
2.6	2	1.4	1.2	1	1.7	1.4	1.8	2.4	1.4	2	1.4	2	1.2	1
1.4	2	2.4	2.2	2.4	2.2	2.4	2.4	3.2	5.4	5.2	4.8	3 6	3.2	3.2
2.8	1.7	1	1.6	1.6	1 8	1.6	1.2	1.4	0.4	1.2	1.6	1.2	1	1.4
2	1.6	2.2	2.2	2	2.1	2	2.9	2.6	2	2.4	2	1.2	2	2
2	1.6	2	2	2	2.2	2	2.3	1.6	2	2	1.4	1.2	1.8	1
2.2	1.8	1	1.4	1.4	1.4	1.4	2.1	2	1.6	1.8	1.4	1	1	1
2.4	2	2	2	2.2	2.4	2.2	2.4	2.6	2.6	2	2.1	2	2	2.4
2	1.4	2	2.2	2.4	2.4	2.4	2.3	1.6	1.4	1.4	1	1	1	1.4
2	2 1	2.2	2.6	2	2.4	2.6	2.6	2.2	2	1.8	2	2.4	2	2.2
2.1	2.8	1.8	2	1.4	2	2.2	2	1.4	1.8	1.8	2	1.4	1.4	1
1.8	1.4	1.4	1	3	1	1	1.6	2.2	2.4	2	1.6	1.6	1.4	1
1.7	1.6	2.6	2 2	2.2	2	2 4	2	1	0.6	1.4	2	1	1	0.8
1.6	2.2	1.2	2	1.6	1.2	1.4	2	1.4	2.4	2.4	2	2.4	1.4	2
2	2	1.6	1.6	1.6	2	3.2	2.4	2	1.7	1.4	2	1.4	1.3	1.6
2.2	2	2	1.8	2.2	2.2	2.4	2	2.2	1.4	1.3	2	1.4	2	2
1.4	1.1	1.6	1.6	1.8	1.2	2	1.5	1.6	1.4	1.6	1.6	1.4	0.8	1.4
1.4	1.6	1.4	1.6	2.6	1.4	1.8	2.4	1.4	1.4	1.8	1.2	1.4	1.4	1
2.4	2.6	3	1.6	2.4	2	2.2	2	1.6	1.6	2	1.8	1.4	1	2.2
2	1.8	1.7	1.4	1.4	2	2.4	1	1	1.6	3.4	3.7	3	1	1.4
2.6	3.2	2.2	2.2	3.4	2	3	2.7	2	2	2.1	1.4	1.8	1.6	2
1.4	1.6	1.8	1.2	1	2.4	1.6	1.6	1.6	1.4	2	2.1	1.4	2	1.6
3	3	3	2.4	3	2.4	2.2	2	2.6	2	2.1	2	2	1.8	2.4
2	2.4	3.7	3	3.2	4.2	2.7	4	3	2.4	2.6	2.2	2.2	2.2	2.2
1.4	1.8	1.8	2	1.6	2.2	2	2.2	1.4	1	2	1.4	1.6	2	1.4
2.1	2	1.6	2	2.4	3	3	2.4	2.2	1.6	2	1.9	1.8	1	2.2
2	1.4	1.4	1.4	1.6	1.8	2	2	1	1.4	1.8	1.4	2.2	1.8	1.6
1.2	1.8	1.4	1.8	1.6	2.4	3	2.7	1.4	1.6	1.4	1.4	1	1.6	1.7
1.7	1.6	2	1.6	2	1.4	3.4	2.6	2.2	2	1.7	1.4	1.2	1.8	1.4
2.2	1.4	2	2.6	4.4	5	3.6	3.2	2.2	2	2	2.4	1.4	2.2	2.2
2.4	2	2.4	2.1	2	2.1	1.6	2.4	2.2	1.4	2	1.6	1 6	1.6	1.2
1 4	1.8	2.8	1 6	1.6	1.2	2	2	1.8	...	2	1.8	1.4	1.4	1
1.8	1.8	2	1.6	1.6	2	1.6	2.2	1.6	1.6	1.4	1.6	1 8	2	2 4
2 4	2.4	2 4	2 2	2.8	3	2.4	2.2	1	1 6	1 6	3	1 6	0.4	1.4
3	2.4	3	3.2	3.2	2	3	2 2	2.2	2	2	2.4	1.6	1 8	1.8
2.4	3	2.4	2.4	2	3	3	2.6	3	2.6	2.6	3	3	2.7	2.1
2.2	2	2.6	2.4	2.2	2.4	2	2.4	2.4	2.4	2	1.7	1.4	1 4	1.2
3 2	3.4	3.6	2.2	2	2	2.4	2.3	1.4	1.2	1.6	1.6	2	2	1.2
2	2.4	2.7	2	3.4	2.2	2.1	2.6	1.4	2	2.2	2	1.8	1.2	1.4
2.2	2 4	2.7	2.8	2.4	3	3 6	2.5	2.8	2.2	3.6	4	3 2	1.8	2
2.6	2.2	2.2	2.2	2 4	2.6	2	2.4	1.8	2	2	2	1.8	1.4	2

72	73	74	75	76	77	78	79	80	81	82	83	84	85	86
				JUNE										
28	29	30	31	1	2	3	4	5	6	7	8	9	10	11
3	1 8	5.4	4	6.6	5.4	99.	De	ad.	Ur	ine	Re	d.		
1.8	2	2	1.6	2	1.6	2	1.8	1.6	1.8	1 8	2.4	1.4	1.8	2
1.8	1.4	1.4	3.6	3	1.6	1.6	1.8	1.4	2	1.6	1	1.6	1.4	2
1.4	2	2.4	3.2	3	2.8	1.4	1.6	1.2	2	1.8	1.1	2	1.8	1.6
1	1.6	3.2	1.6	5.4	4.6	3	1.6	1.2	1.6	1.8	1.8	2	2.2	2
1.4	1.6	1	2	[illegible]	4	3.2	3	2	3.4	2.6	1.4	2	1.6	2.2
3	3.2	2.4	..	2.6	3	3.4	2.6	2.2	2.2	2	2	2	2	2.2
1.6	1	1.6	1.6	1.4	1.6	1.2	1.4	1.6	1	2	2.2	1.2	1 4	2
2.4	2	1.6	2	2	2	1.6	2	4	2.8	2.8	2.2	2.2	2.4	2.2
1.6	2	1.6	1.4	1.4	1.2	2.4	2.6	6	2.6	2	2.2	3 2	4.2	1.6
1.6	1.6	2.4	1.2	1.4	1.4	2	1	1	1.8	2	1.6	2	1.4	1.6
1.6	1.6	3	4.6	1.6	2	2	2	2.2	2.4	2	2.2	2	2.6	2.8
1.4	1.6	1.6	1.2	1.8	3.8	3	2.5	1.6	1.6	2	1.6	1.6	2 4	2 2
1.6	2.4	2.2	2.4	2	2	2.4	2	2 2	2.6	2.4	3.4	2.2	3	3
1.8	1.4	1	2	1.6	4.4	5.2	2.2	1.6	3.8	3.2	4	1	2.2	2
1.4	1.4	1.2	2.4	1 6	2.2	2	1.4	1.2	2.2	4.4	5	0.2	0.6	1.2
0.8	2 4	1	2	1.2	1	2.4	4.6	3.6	7.4	0.4	3	De	ad.	Re
1.6	2	1.2	2.2	4.4	3.4	1.6	1.4	1	2	1.4	1	1.8	1.6	1 8
1.4	1.6	1.4	1.6	1.6	1.4	2.6	1.6	2 6	1	2	2	2.4	2	3
2.2	2.6	2.4	2.4	2	2.4	3	3	1.6	2.6	...	3	2.4	2 2	...
1	1	2.6	1.4	1	1.4	1.6	1.8	3.4	1.6	1.4	2	1 6	2	1.4
1.4	2.2	1.4	1.6	1	1	1.6	0.8	1	2.2	2.6	2.2	1.8	1.8	2.4
2	2	2	2.2	2	2	2.4	2.2	1.8	2.6	3	2.6	2.4	2.6	1.6
1.8	1.8	1.8	2	1.6	1.2	1.4	1.6	1.6	2.2	1.4	1	1.2	1 6	3
1	1.4	1.8	2.2	2.6	1.4	2.4	2	2	2.4	3 2	3.2	2 2	2.6	2
1.4	2 2	1.4	1 8	1.8	1.8	3.6	2.2	2	2 2	3	4.2	3.6	1.6	1.4
2.4	2.7	2.4	3.2	3	2.4	2	2.2	2	2.4	3.2	2	3	3.6	2.4
2	2.1	1.8	2.6	2.2	2.6	2.4	...	3 4	4.4	3.4	5	3.4	3	5.2
1.8	2	1.2	2.6	1.6	1	..	1.6	1.2	2	1.6	1.6	2.2	6	1
2.6	1.8	1.4	1.4	2	2	3	2.2	1.8	2 2	2	2	2.2	1.6	1 4
1.8	1.6	1.2	1.6	1.6	5	5.4	8	5.4	1	De	ad.	Re	d	Uri
1	2.1	1.2	1.4	1.7	1.6	2	3 4	7	3	1.6	2	3	2	2.2
1.6	1.2	1 4	1.6	1	2	1.8	1.2	1.2	1.8	2 4	5	1.4	1.4	1.6
1.4	2	1.4	2.4	2.2	2	3.2	2.2	2.4	3.2	2 2	2.2	2.2	2	2
1.2	2	1.2	2.2	2.4	2	2	1	2	5	5 2	4	2	1.6	3.2
1.6	2.2	1 6	....	1 8	1	1.8	1	1.4	1.4	2 2	2	1.6	1 4	1.6
3	3	1	2	1.6	1 8	1.6	1.6	1.6	4	2	1.4	1 4	1.6	2
1.6	2 4	1.6	7.4	4	5	6	4.6	2	2 6	2 4	2	2.6	2.6	5.8
1.6	2 1	1.8	2.2	2.6	3	2.4	2 2	1.6	4.8	3.4	2	2	1 2	3
2 4	2 4	2	2.8	3.4	6	5.4	4.4	2.6	6.4	3.4	3	2.6	4	2
2	2.4	1.8	2.6	1.8	2.6	2	2	1.2	2 4	1 8	2	2.2	2 4	1 6
1.2	1.4	1.2	2	2	2	2	4	2 2	3.6	3.4	2.2	2	2	2
1 6	2	1.6	1.8	1	1.4	2.2	1.8	1 6	2.4	4	2	2	2 6	3
2.6	4	4	2.4	1.6	1.4	2 6	2 6	2 4	2.4	2.2	2.6	2.5	3	1.7
2	2	1.8	2.2	3	1.6	2.6	1.8	2	2.4	2.6	2	2 2	1 6	2.2

87	88	89	90	91	92	93	94	95	96	97	98	99	100	10
12	13	14	15	16	17	18	19	20	21	22	23	24	25	2
2	2	1.4	1.6	2	1.4	2.2	1.6	2.6	1.2	1.1	1.2	1 2	2	1
2.2	2.4	2.6	2.8	2	1.4	1.6	1.2	1.6	1.4	2.2	3	1	1	1
1.2	1.2	1	1.1	2	3	1.7	1.5	1	2	1.2	1.2	1.2	1.2	2
1 8	1.6	2 2	1.4	1	1.6	1 6	1.4	2	1.1	1.6	1.1	1	1	1
1.4	1.6	1.4	1.4	1.4	1.5	1.8	2.2	1.2	1	1.8	1.2	1.2	0.6	1
2.4	2	2	1.6	2	2.2	2.4	2.2	1 6	1 6	2.4	1.4	1.6	1.6	1
1 4	2	1.6	1	1	1.4	1.8	2	1.2	1.2	1.6	1.2	1.1	1.6	1
2	2.6	2.4	2.6	2.4	3	3 2	2.6	2	2.2	2.8	2.6	2.6	2	2
1 6	2	2	2	1.4	2	1.2	1	1	2	1.6	1.2	1.2	1.8	1
1.6	1.6	1.4	1.4	...	1.6	1.4	1.8	1.6	1.2	1 6	1.4	1	1.4	1
2	2.2	2	2.2	2	1.8	2.2	3.2	2	1.8	1.6	2	1.4	2.1	2
1 6	3.2	2.6	1.6	2 6	2.6	2.6	2.6	2.4	1.6	2.2	2.2	1.2	1.6	2
2.2	2 2	2	2.2	2.2	2	2	2	2	1.2	2	1.4	1.4	1.6	2
2.2	2.6	2 2	2	1.4	2	2.6	2.6	2.2	2	2	2.2	1	1.2	1
1.4	2	1.6	2	1.8	1.8	3	2	2.6	1.6	1.4	1	1.2	1	1
d U	rin	e.												
2.2	2	1.6	2.2	1.6	2	2.4	2.2	1.8	1.4	2.2	1.1	1.4	1.6	1
1.2	1.2	2	2 2	1.6	1.2	1.6	1.4	1.5	1.2	1	1.1	0.4	2	1
3	2.6	3	2.6	3	3	4	4.1	4	3.2	2.8	3	3	2.4	3
1.2	2.2	3	2.2	1 6	1	3	2.2	1	1	1.6	2	5	1	1
2	3	3	...	1.6	2.4	2	2.4	2.4	1.8	1.2	1.2	2.8	1.2	1
2.6	3.2	2.6	2.6	1.8	3.4	3.8	3.4	2 2	2.2	3.2	1.6	2.2	2.2	1
1.4	2	2.2	1.4	1.8	2.4	2.2	2 2	2	1.6	2	1.4	1.8	2.4	1
1.6	2	2.2	3 2	1.7	1 6	1.6	1.8	1.4	2	2	2	1.2	1.2	1
1.6	2	2	2	1.4	1.8	1.3	1	1.4	1.6	1.4	2 2	1.2	1	1
3	3 2	3.2	3.6	2.6	4	3 6	2.6	3	3	4	2.6	3	3	2
2	3 6	4 2	2.2	2	2.4	3	3.2	3	2 2	2.2	2	2	1.4	2.
1.6	2	1.8	...	1.4	2	1.5	2	1.8	2.2	2	2	1.6	1.4	1
2.6	2	2	1	2.4	3	2.6	2.5	2 5	2 6	2.4	2.2	2	2.4	1
ne.														
1.8	1.6	1.6	3.4	2.2	1.8	2.6	2	1.6	1	2.4	1.4	1.4	2	1
1.6	1.6	1.8	3	2.2	1 8	2.6	2.4	1.2	2	3	1.8	1.2	1	2.
2 6	2.2	2 6	2.2	2.2	3	2.5	3.6	1.8	2.6	2.6	3	4.4	3.5	4
3 2	2.6	4	2.4	2 2	2.6	2.8	3 4	2	1.5	2.2	2.6	2.6	2	1.
2	2	2	1.2	2	1.4	2	2.1	2 8	2	2	2.4	1	1	1.
1.6	2 2	1.6	1.4	1.4	1.6	1.6	1.6	2.2	1.6	1.2	1 2	1.1	1	1.
1.4	2	2	2 6	2 4	3 1	2.8	2.8	2	2	2 5	1.6	1.6	2 8	3
2	2.8	2.2	2.2	2.6	3.4	3 2	3.4	3.2	2.6	2.8	2.4	2 6	2.6	2.
2.4	2.2	....	3	4 2	3 8	3	2 8	3	3.4	4.4	4.1	2.6	2	2
2	2.2	2.2	1.8	2	1.6	2	2.4	2.2	1.5	2.2	1.2	1.2	1	2
2 2	2.2	3	2	2.2	2.4	4.2	3	2.8	2.4	2.4	1.4	2.2	2	2.
2 4	2.8	....	2.6	2 6	4	3.4	3 4	3.2	2	2.4	1 6	2	2.5	2
3	3.4	3.2	2.2	3	5	4	3.2	3.2	3.8	4.2	3 4	5.6	4.6	5
2	2.4	2.6	2.8	3 6	2.7	3.4	3.3	2.8	2.4	2.3	2	2	1.4	1

VER FOLLOWING TWO INOCULATIONS WITH INFECTED BLOOD.

–2.4 reads 102.4 degrees F.

MAY

JUNE

* Second Inoculation. 1 c. c. of Blood.

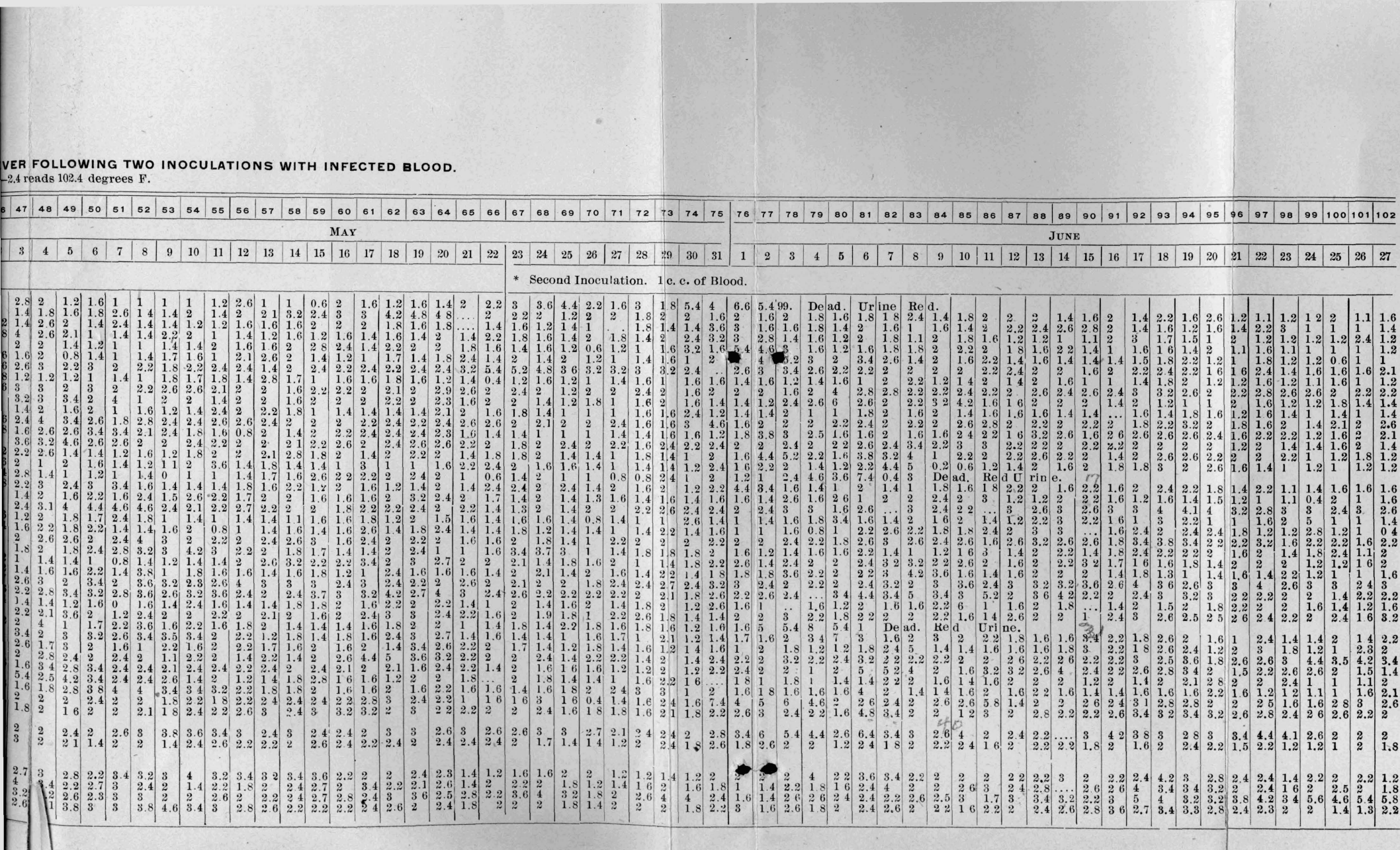


TABLE III, SHOWING FIFTY TYPICAL CASES OF INOCULATION FEVER.

EXPLANATION.—When 2.4 is used the figures indicate a temperature of 102.4 degrees F.

No.	ANIMAL	Age	Dose	Date	Owner	DAYS AFTER INOCULATION — PRIMARY FEVER PERIOD																																							
						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
12	Hereford Bull	8 mos.	1 c. c.	Jan. 13, 1901	Brown	2	2.3	3.2	2.2	1.8	2.2	2.8	2	5.8	4	3.6	2.6	2	4.8	5.6	5	4	4.3	4.9	0.8	2.1	1.2	1	0.8	1.4	2.6	2.6	2.2	2	2	1.6	4.2	4.7	4	5.4	5.1	5	3.9	3.8	4.8
5	Hereford Bull	8 mos.	1 c. c.	Jan. 13, 1901	March	2.4	3.4	4.5	2.4	1.8	3	2.5	1.6	2.6	4	3	6.2	3	7	2.5	3.2	1.8	1.5	2	1	2.2	3	2.1	3	3.2	3	1.8	1.6	4.5	1.8	3	6	0.2	5	4.2	6	6.4	3.8	3.5	4
32	Hereford Bull	12 mos.	1 c. c.	Feb. 21, 1901	King	....	....	....	...	1.2	1	2.7	4.8	3.6	5.4	4	2.6	3.6	4	1.8	3.4	2.4	1.6	1.8	1.3	1.4	1	0.2	0.4	0	0.4	1.4	0.2	99	2.2	1.4	1.4	0.2	0.4	1.4	2	1.8	1	1	1.6
46	Hereford Bull	12 mos.	1 c. c.	Mar. 29, 1900	Rhome	2.8	3	2	0.4	2	2	2	5.5	1.7	2.4	4.2	3.2	2.5	0.8	3	4.2	3.6	3	2.8	2	2.1	2.2	1.8	1.2	1.9	2.5	1.8	1.5	1.3	1	2.6	2.8	2.4	4.8	5.6	4	3.7	4.1	3.8	3.1
19	Hereford Bull	10 mos.	1 c. c.	Feb. 21, 1901	Mayer	....	....	2.2	3	1	2	2	4.4	3	4.6	5.2	2.8	1.2	2.2	1.3	1.6	2.6	0.2	2	1.8	0.6	1	1.2	1	0.5	1.9	2	1.8	1	1	1.8	2.2	2.8	4.4	5.3	5.8	4.4	4.4	4	3
103	Hereford Heifer	11 mos.	1 c. c.	Mar. 14, 1900	Weddington	2.5	3	2.7	1.2	3.2	1.6	3.2	5.9	3.4	4.2	5.4	4.2	4.6	4.9	4.7	4.4	4.4	3.6	3	2.1	2.2	1.7	1.9	2.2	4.3	1.8	2	2.8	2.3	4	2.3	2.6	1.8	2.9	4.9	5.8	5.4	5.2	4.2	4.6
1	Hereford Heifer	11 mos.	1 c. c.	Feb. 21, 1901	Specht	....	....	2.2	1	1	1.7	1	7.6	4.8	5	4	2.4	2.6	1.2	3	2	2	1	0.2	2	1.2	0	1.1	0.6	0.8	1.6	3.5	4	3.8	5	2.2	2.4	2.7	2.5	3.2	5.8	6	5.8	4.6	5
0	Hereford Heifer	17 mos.	1 c. c.	Mar. 29, 1900	Rhome	....	....	1.7	1.7	1.3	2	2	1.7	5	5	4.2	2.4	2.3	0.4	1.9	2.8	2.5	1.8	3	2.8	0.8	1.8	1.3	2.9	1.6	1.6	1.3	3.5	2	2.9	4.2	3.4	3.8	4.2	4.4	2	2.5	3.7	3.6	4.6
9	Hereford Heifer	8 mos.	1 c. c.	Jan. 13, 1901	March	1.4	2.3	2.3	2.4	2	1.8	2.8	2	2.3	6	2.2	5.2	4.3	2	3.7	1.8	1.6	1	2	1.6	3	1.6	0.6	2.2	1	2	3.4	2	0.8	1	4	1.8	2	3.6	2.8	3.9	4	4.2	1.8	5.2
20	Hereford Heifer	12 mos.	1 c. c.	Feb. 21, 1901	Mayer	....	....	1.5	1.4	1.5	1.8	1.4	1.5	3.8	5.6	6.4	2.4	1.7	1.6	1.6	2.2	2.6	4.2	3.2	2	1.1	1	2.6	1	2	2	2	1.4	0.6	1.4	1.4	1.8	2	1.4	1.8	2.4	1.6	3.4	3.2	4.2
39	Shorthorn Bull	12 mos.	1 c. c.	Jan. 8, 1900	Kenedy		2	0.8	0.4	1	2	1	3.2	3.8	2.7	3.1	1	4.2	6.2	6	4.6	1.6	3.1	2.6	3	1	0	0.8	0.5	0.6	1.8	1.8	1.6	1.8	2	1.8	2	4.6	4.6	5	4	3	2	2.6	1
63	Shorthorn Bull	5 mos.	1 c. c.	Feb. 10, 1901	Hunt	3	3.4	2.6	3	2	1.6	2	4.5	2.4	2.3	5.2	3.4	5	4.5	5.8	5.7	5.6	5.7	3.2	1.7	3	2.8	1.6	1.4	1.8	2.4	4.4	1.6	2.4	3	2.6	2.4	1	1	2	2.6	1.6	1.8	1.6	2.8
2	Shorthorn Bull	9 mos.	1 c. c.	Dec. 24, 1900	Green	3	2	2.4	1	1.2	1.6	2	0	3	2.2	1.8	1.8	5	5.8	6.2	5	5.2	5	4.4	2.2	3.2	3	4.2	4.2	2	2	1	2.6	2	1.8	1.8	2	2.8	2.2	3	4.2	4.6	3.2	4	4.2
3	Shorthorn Bull	11 mos.	1 c. c.	Dec. 24, 1900	Green	2.8	1.8	2.6	1.6	2.2	2.8	3	4.8	6.4	3.6	1	2.4	3	3	3	3	4.8	4.6	3.4	1	1.6	2.4	3	3.6	2	2	1.2	2.6	3.3	1.8	1.8	2	1.8	1.4	1.8	3.4	3.4	4.8	5.4	6.6
10	Shorthorn Bull	20 mos.	1 c. c.	Mar. 9, 1901	Landa	2.6	2	2	3	2.6	2.4	2	2	2.6	2.6	4.8	3.5	4	5	4.8	4.4	4.4	4.4	4	3.6	2.4	3.4	1	2.1	1	2.4	2.2	1.2	0.2	1.6	3.7	4.2	4.6	4.2	4.2	3	3.6	3	2.6	2.6
46	Shorthorn Heifer	13 mos.	1 c. c.	Dec. 31, 1900	Wangemann	1.6	1.4	3.2	2.8	5.8	7	6	6.4	6.4	6	4.8	4.6	1.2	1	1.4	2.4	2.1	7	2	2.2	2.6	2	2.4	2	1.8	2.4	5.4	2	2	1.2	1.2	1.2	1.8	2	2.2	1	2	3.2	3.2	2.4
1	Shorthorn Heifer	8 mos.	1 c. c.	Jan. 19, 1900	Hunt	....	1.3	1.3	2.2	2.2	2.2	4.5	4.6	5	5.2	6.2	5.3	4.2	3	2.2	2.3	5.3	2.3	2.1	5	4.3	3.1	2.4	2	3	2.2	2.1	2.1	2.1	1.4	2.1	2.1	2.1	2.2	2	....	....	....	3.2	4.3
27	Shorthorn Heifer	8 mos.	1 c. c.	Dec. 23, 1899	Kenedy	2.3	2.5	2.4	2	1.6	2	2.3	2.4	1.6	2.5	1.6	4	2.4	4.8	4.4	1.8	2.1	2.6	2.5	2.5	2.6	2	2.2	4	5.2	4.3	4.2	3.6	1.8	2.1	2.8	3.2	2.8	2.6	3.4	4	2	4.6	4.9	3.6
1	Shorthorn Heifer	12 mos.	1 c. c.	Nov. 3, 1900	Green	3	2	....	2	...	3	....	2	....	5.2	1	1.3	2.3	4.2	4.4	6	6.4	7	6.2	5	5	4.6	4	3	1.8	2	2	4.2	4.6	1	1.2	2	1.4	1.6	1	1.4	1	2	1	1
2	Shorthorn Heifer	12 mos.	1 c. c.	Nov. 3, 1900	Green	2	1	..	2	...	3	...	3	....	2	1	1.4	2	4	3.4	3	2.6	2	3	3	2	2	2	2.2	3	1	1.4	2	2	1.2	1.6	1.6	2	1.6	1	3	3	5.6	5	5.8
1	Red Poll Bull	10 mos.	1 c. c.	Dec. 4, 1900	Howell	3.2	1.4	2.8	1.2	1	1.4	2.3	3	1	3.5	1.3	1.4	2	2.7	2	1	3.6	4	2	2.2	3	3.8	3.8	2.4	1.6	2	2	1.7	0.7	3.4	1.3	3.6	3.2	3.6	4	4.4	4	3	2.4	2.2
8	Red Poll Bull	10 mos.	1 c. c.	Dec. 31, 1900	Fuchs	1.4	2	1.8	1.5	2.2	2.7	2	3	2.6	2.8	4	4.8	4.5	3.4	2.8	4.3	3	0.8	1.2	1.8	2.5	2.2	2.8	3.4	3	1.2	2.6	1.6	1.4	2.2	1.6	1.8	1.4	2	2	0	1.2	2	1.7	3
2	Red Poll Bull	12 mos.	1 c. c.	Nov. 3, 1900	Green	3	1	....	2	...	2.4	...	4.2	....	2	1.3	4	5.1	4.2	5.2	5	5.4	4	4.4	4.4	3.2	3.2	3	3.2	4	2.4	2.2	2.1	4	4.6	3	3	4	5	5	6.4	5.6	6.4	5.6	5.2
2	Red Poll Bull	16 mos.	1 c. c.	Mar. 9, 1901	Landa	1.2	2	3	2	1.7	2.4	1.3	2.4	3	2	4.8	4.8	5	6.2	6.2	6.4	5.2	2	1.8	4	3.1	1.6	0.3	0.6	0	1.4	1	1.6	1	1.4	1	1.2	5	4.1	5	4	4.4	4.7	4	3.4
66	Red Poll Bull	19 mos.	1 c. c.	Jan. 27, 1900	Jennings	1.1	1.8	99.7	0.4	99.8	99.7	0.3	2	1.1	1.9	1.7	1.6	1.4	3.7	4.5	5.7	6.2	3.8	1.6	1.8	1.2	0	1.8	1.6	0.6	1.6	1.4	1.6	0.7	1.1	1.7	2.3	3.2	3.6	5.6	5.1	5.4	4.2	3.6	3
65	Red Poll Heifer	16 mos.	1 c. c.	Jan. 27, 1900	Jennings	1.2	1.2	0.6	0	99	1.2	99.7	1.1	1.7	[illegible]	1	2.4	2.4	4.3	2.6	3.1	4.9	2.3	4	2.6	2.1	1	0.6	1.8	1.4	1.6	1	2.2	0.8	0.5	1	3.2	2	2.2	2.4	4	3.8	4.6	5.2	5
98	Red Poll Heifer	16 mos.	1 c. c.	Dec. 4, 1900	Howell	1.5	1.5	1.8	0.8	1.8	5.5	3.2	6.2	3.5	[illegible]	[illegible]	0.6	2.1	2.4	2.6	3	1.8	2.8	2.4	2.4	2.4	1.4	2.3	2.2	2.4	1.4	1.4	1.4	2.4	1.4	1.5	1.4	1.7	1.7	2.2	1.8	2	2	3.7	4
30	Red Poll Heifer	9 mos.	1 c. c.	Feb. 21, 1901	Peters	1.4	1.5	2.2	1.6	2.5	2	2	5	5.8	3.8	5.8	2.4	0.6	1.4	2.5	1.6	0.6	0.5	1.2	1.5	1.2	3.9	3.6	4.7	6.6	5.5	6.4	5.5	4.5	2	1.4	0.6	1.4	1.4	1.6	1.4	1.5	2	1.4	1.8
73	Red Poll Heifer	10 mos.	1 c. c.	Feb. 21, 1901	Hunter	3.4	2.4	2.5	2.4	2.4	2	4.8	5.9	2.2	4.6	7.5	2.8	1	1.2	2	2.2	1.6	2.7	1.7	1.6	1.5	1.8	1.4	4.7	1.6	1.6	1.5	1.4	1	2	1.4	1.6	1.4	1.4	2.5	2.2	3.2	3.5	2.8	3.7
8	Red Poll Heifer	12 mos.	1 c. c.	Nov. 3, 1900	Green	2	1	....	2	....	3	...	3.3	....	2.3	2	2.2	4	5	4	4.2	4.4	3	4.2	3	2.4	2.2	2.8	3	3	2.2	2	2	2.2	2.6	2.8	2.4	1.8	4.8	4	5	4.4	4	3	3
6	Polled Durham Bull	13 mos.	1 c. c.	Mar. 8, 1901	Landa	3.2	2.6	2.4	2.8	3	3.4	3.4	2	3.4	1.8	4.4	5.2	5	4.2	5	5.4	3.6	3.6	3	3	2.4	4.6	2.4	2.4	2	2.7	3	2.6	2.2	2.6	4	5.2	5.6	4	4	4.4	2.6	4	3	3.4
7	Polled Durham Bull	12 mos.	1 c. c.	Mar. 8, 1901	Landa	2	2.4	2	2	2	2	2.5	2.8	4.2	4.4	5.2	3.8	4.2	4.2	5.2	5.6	5	2.8	2	3	5	4.6	0.1	1.6	1.7	1.6	2	1.4	1.1	1.6	2	1.6	3.2	2	2.6	2.6	4.7	4.4	4.6	5
8	Polled Durham Bull	8 mos.	1 c. c.	Mar. 8, 1901	Landa	3.2	3	2.4	3	2	3	2	3.7	4.4	3.2	3.4	2.6	2.4	4	2.8	2.4	1.8	3.4	3.4	2.8	3	3.2	3.2	2.6	1.6	2.6	3	2.4	3	5	4.7	4	4	4.2	4	3	2	0.6	1.4	1
9	Polled Durham Bull	12 mos.	1 c. c.	Nov. 12, 1900	Green	2	2	3	4	3.4	4.4	5	4.4	3.8	4.2	4.2	2.4	3	1.8	2.4	3.4	4	2	2	1.4	2	2	2	1.6	1.2	2	1.4	1.4	2.6	1.4	4.6	2.6	4	5.4	6.8	5.4	4	2	1.6	2
4	Polled Durham Bull	12 mos.	1 c. c.	Nov. 3, 1900	Green	4	3	....	2	....	3	....	5	....	4	1.2	3.2	3.1	3.3	3.3	4.4	4.4	3	5	5	3	2	2.6	5.4	5.8	5	4.6	3.4	2.6	3	2	1	2.6	2	3	4.2	5.4	5.8	5.8	[illegible]
4	Polled Durham Heifer	12 mos.	1 c. c.	Nov. 12, 1900	Green	2	2	2.8	2	4.2	3	4	5.2	5.2	4	3.8	3.6	2.4	2.4	3.8	5	4	2.4	2.4	2	1.2	1.6	2	3	2.4	1.4	3	1.2	2.8	1.8	4	2.4	3.4	3	4	3.6	4	5	5.6	[illegible]
5	Polled Durham Heifer	12 mos.	1 c. c.	Dec. 6, 1900	Green	3	1.2	1	1.4	1.2	2.2	1.4	1	2	5	5	3	2.2	3	5.6	2	2	1.4	1.6	1.4	3	2	1.6	3.6	2	0.6	1	1.6	1.6	3.2	0.6	1	1.4	1.4	1	0.6	1.6	1.2	1.2	2
32	Polled Durham Heifer	12 mos.	1 c. c.	Mar. 18, 1901	Landa	1.6	2	2.6	1.1	2	2	2	2.2	5.2	3.6	1.7	1.4	4	5	5.1	5.1	5.4	4.2	0.6	1	1.6	0.8	1	2	2	3.2	2	3	3.7	3	5	5.2	5	5	4.6	4	4.6	4.4	3	2
33	Polled Durham Heifer	12 mos.	1 c. c.	Mar. 18, 1901	Landa	2	2.1	1	1.2	1.8	2	2	1.7	1.7	4	6	1.4	1.4	3	2	2.4	3	2.4	2.4	3	1	2	1	2	2	2	1.6	2.2	2.8	1	4	4.4	[illegible]	[illegible]	6	5	6.2	4.1	4	[illegible]
36	Polled Durham Heifer	[illegible] mos.	1 c. c.	Mar. 18, 1901	Landa	2.6	1.6	2	3	2.6	5.4	3	2.6	2.8	3	3.7	2.4	2	1.7	1.2	2	2.4	1	1.6	1	1.6	1.8	1.4	2.1	3	4.2	5	5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	5.8	3.6	4.2	[illegible]
1	Hereford Sucking Calf	69 days	1 c. c.	Apr. 7, 1901	Riverside	2.6	2.2	2.4	2	[illegible]	2.4	2.5	2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3.5	2.4	2.4	4.7	3.7	3.6	3.4	2.8	3.4	4.5	2.9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4.4	3.2	[illegible]	[illegible]
2	Hereford Sucking Calf	70 days	1 c. c.	Apr. 7, 1901	Riverside	0.4	2	1.3	1.6	1	2	3	4.2	4.9	6.7	5	4.7	3.2	5	4.8	3.8	2.4	[illegible]	4.4	4	3.2	3.6	3.2	2.5	2.4	2	4.2	1	1.5	1.6	1	1	[illegible]	[illegible]	1	3	3.3	4.5	[illegible]	[illegible]
3	Hereford Sucking Calf	44 days	1 c. c.	Apr. 7, 1901	Riverside	1.8	3.9	3.3	3.4	3.2	2	1.8	1.4	2.4	3.8	3.7	4.7	4	3.4	3	4	4	3	2.6	2	2	1.5	3	2.7	2	1.6	1.9	1.8	2	1.8	1.6	1	1	1.7	2.2	1.4	4	2.7	[illegible]	[illegible]
4	Hereford Sucking Calf	49 days	1 c. c.	Apr. 7, 1901	Riverside	2	2.4	2	2.4	2.2	2.4	4.7	5.4	4.5	5.5	4	5.5	5.7	5.7	3.5	2.5	2.4	2.1	2.5	2.5	3.7	3.5	4	1.9	1.6	2	2.4	2	2.6	3	3.5	3.8	5.6	3.8	3.8	2.4	3.6	1.8	[illegible]	[illegible]
5	Hereford Sucking Calf	45 days	1 c. c.	Apr. 7, 1901	Riverside	2.2	2.3	2.9	1.8	2.2	2.4	2.6	5	4.8	6	6.2	4.6	3	4.2	2	3.2	3.5	4.6	3.6	[illegible]	[illegible]	[illegible]	2.4	2.6	2	2.1	2.4	2	2.5	2.4	1.7	1.7	2.5	2.9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6	Hereford Sucking Calf	44 days	1 c. c.	Apr. 7, 1901	Riverside	2	1	1.8	1.5	1.4	2.7	2.7	3.8	3.6	5.6	4.4	3	5.2	5.4	3.9	3	2.8	3	2.7	3.5	3.8	4	3.4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2.4	2.7	2.6	2.2	2.2	3	2.2	2.4
8	Hereford Sucking Calf	50 days	1 c. c.	Apr. 7, 1901	Riverside	2.5	2.4	2	1.8	2.1	2	2.6	2.5	3.8	4.6	6.2	6.7	5.2	4.4	3.2	3.6	4.6	5	4.2	2.6	2.6	2.6	2.5	2.4	2.8	2.3	2.5	2	2.5	2.5	2	3	4.8	4.7	3.6	4	4	2.7	3.4	3.2
9	Hereford Sucking Calf	47 days	1 c. c.	Apr. 7, 1901	Riverside	2	2.2	2	1.6	1.6	1.9	1.9	2.2	5	5.8	6.2	7	4.2	5.4	4.3	4.1	4.1	4	3.8	3	2.5	2	2.5	1.7	2.5	4.3	2.4	2.4	2.8	2.4	1.7	2	1.7	1.6	1.7	1.5	1.7	1.8	2.3	2.8
10	Hereford Sucking Calf	66 days	1 c. c.	Apr. 7, 1901	Riverside	2.7	2.3	2.1	2	2.3	2.4	2	2.4	2.5	4.8	3.6	4.2	2	3.8	3	2.4	3.4	2.8	2.6	2.4	3	2.7	2.6	2.3	3	2.4	2.9	3.3	2.2	3.7	3.4	3	3.4	3	4.3	4.5	4.1	4	5.3	4.8
11	Hereford Sucking Calf	54 days	1 c. c.	Apr. 7, 1901	Riverside	2.2	1.8	2	1.8	2.2	2.5	2.7	2.6	3	3	4.2	6.6	6.2	6.4	3.2	2.5	1.8	2	2.2	3.6	3.6	2.4	2.2	2.4	3.6	2.4	2.3	2.2	2.2	2.4	2	2	1.7	1.8	1.3	1.4	3.1	3	4.4	3.5

DAYS AFTER INOCULATION

ERIOD

18	19	20	21	22	23	24	25	26	27	28	29	30
4.3	4.9	0.8	2.1	1.2	1	0.8	1.4	2.6	2.6	2.2	2	2
1.5	2	1	2.2	3	2.1	3	3.2	3	1.8	1.6	4.5	1.8
1.6	1.8	1 3	1.4	1	0.2	0.4	0	0.4	1.4	0.2	99	2.2
3	2.8	2	2.1	2.2	1.8	1.2	1.9	2.5	1.8	1.5	1.3	1
0.2	2	1.8	0.6	1	1.2	1	0.5	1.9	2	1.8	1	1
3 6	3	2.1	2.2	1.7	1.9	2.2	4.3	1.8	2	2.8	2.3	4
1	0.2	2	1.2	0	1 1	0.6	0 8	1.6	3.5	4	3.8	5
1.8	3	2 8	0.8	1.8	1.3	2.9	1.6	1.6	1.3	3.5	2	2.9
1	2	1.6	3	1.6	0.6	2.2	1	2	3.4	2	0.8	1
4.2	3.2	2	1.1	1	2.6	1	2	2	2	1.4	0.6	1.4
3.1	2.6	3	1	0	0.8	0.5	0.6	1.8	1.8	1 6	1.8	2
5.7	3.2	1.7	3	2 8	1.6	1.4	1.8	2.4	4.4	1.6	2.4	3
5	4.4	2.2	3.2	3	4.2	4.2	2	2	1	2.6	2	1.8
4.6	3.4	1	1.6	2.4	3	3.6	2	2	1.2	2.6	3.3	1.8
4.4	4	3.6	2.4	3.4	1	2.1	1	2.4	2.2	1.2	0.2	1.6
7	2	2.2	2.6	2	2.4	2	1.8	2.4	5.4	2	2	1.2
2.3	2.1	5	4.3	3.1	2.4	2	3	2.2	2.1	2.1	2.1	1.4
2.6	2.5	2.5	2.6	2	2.2	4	5.2	4.3	4.2	3.6	1.8	2.1
7	6.2	5	5	4.6	4	3	1.8	2	2	4.2	4.6	1
2	3	3	2	2	2	2.2	3	1	1.4	2	2	1.2
4	2	2.2	3	3.8	3.8	2.4	1.6	2	2	1.7	0.7	3.4
0.8	1.2	1.8	2.5	2.2	2.8	3.4	3	1.2	2.6	1.6	1.4	2.2
4	4.4	4.4	3.2	3.2	3	3.2	4	2.4	2.2	2.1	4	4 6
2	1.8	4	3.1	1.6	0.3	0.6	0	1.4	1	1.6	1	1.4
3.8	1.6	1.8	1.2	0	1.8	1.6	0.6	1.6	1.4	1.6	0 7	1.1
2.3	4	2.6	2.1	1	0.6	1.8	1.4	1.6	1	2.2	0.8	0.5
2.8	2.4	2.4	2.4	1.4	2.3	2 2	2.4	1.4	1.4	1.4	2.4	1.4
0.5	1.2	1.5	1 2	3.9	3.6	4.7	6.6	5.5	6.4	5.5	4.5	2
2.7	1.7	1.6	1.5	1.8	1.4	4.7	1.6	1.6	1.5	1.4	1	2
3	4.2	3	2.4	2.2	2.8	3	3	2.2	2	2	2.2	2.6
3.6	3	3	2.4	4 6	2.4	2.4	2	2.7	3	2.6	2.2	2.6
2.8	2	3	5	4.6	0.1	1.6	1.7	1 6	2	1.4	1.1	1.6
3.4	3.4	2.8	3	3.2	3 2	2.6	1.6	2.6	3	2.4	3	5
2	2	1.4	2	2	2	1.6	1.2	2	1.4	1.4	2.6	1.4
3	5	5	3	2	2.6	5.4	5.8	5	4.6	3.4	2.6	3
2.4	2.4	2	1.2	1.6	2	3	2.4	1.4	3	1.2	2.8	1.8
1.4	1.6	1.4	3	2	1.6	3.6	2	0.6	1	1.6	1.6	3.2
4.2	0.6	1	1.6	0.8	1	2	2	3.2	2	3	3.7	3
2.4	2.4	3	1	2	1	2	2	2	1.6	2.2	2.8	1
1	1.6	1	1.6	1.8	1.4	2.1	3	4.2	5	5		
3.5	2.4	2.4	4.7	3.7	3.6	3.4	2.8	3.4	4.5	2.9		
2	4.4	4	3.2	3.6	3.2	2.5	2.4	2	4.2	1	1.5	1.0
2	2.6	2	2	1.5	3	2.7	2	1.6	1,9	1.8	2	1.8
2	2.5	2.5	3.7	3.5	4	1.9	1.6	2	2.4	2	2.6	3
2.1												
4.6	3.6	3.1										
3	2.7	3.5	3.8	4	3.4							
5	4.2	2.6	2.6	2.6	2.5	2.4	2.8	2.3	2.3	2	2.5	2.5
4	3.8	3	2.5	2	2.5	1 7	2.5	4 3	2.4	2.4	2.8	2.4
2.8	2.6	2.4	3	2.7	2.6	2.3	3	2.4	2.9	3.3	2.2	3.7
3	2.2	3.6	3.6	2.4	2.2	2 4	3.6	2 4	2.3	2.2	2.2	2.4

SECONDARY FEVER PERIOD

31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58
1.6	4.2	4.7	4	5.4	5.1	5	3.9	3.8	4.8	5	3.8	2.6	2.5	2	1.6	2.4	1.8	2.3	2.8	2	1	1	....	....	....	....	....
3	6	0.2	5	4.2	6	6.4	3.8	3.5	4	4.8	4.4	2.3	2 8	2.5	0.5	....	....	....	....	....	....	....	....	....	....	....	....
1.4	1.4	0.2	0.4	1.4	2	1.8	1	1	1.6	1.4	1.4	1.5	1.8	3	3.4	3.7	3.8	4.6	3.6	4	1.6	2.4	1.8	4.6	2.8	1.8	1.6
2.6	2.8	2 4	4.8	5.6	4	3.7	4.1	3.8	3.1	2.7	2.8	2	2.6	2	2.6	2.6	....	....	....	....	....	....	....	....	....	....	....
1.8	2.2	2.8	4.4	5.3	5.8	4.4	4.4	4	3	1.4	1.6	1	1.2	2.2	2.6	1.6	1.2	1.6	1.2	2.8	1.8	2.6	2.4	2	3.6	1.8	2.4
2.3	2.6	1.8	2.9	4.9	5.8	5.4	5.2	4.2	4.6	4	4.5	4.7	3.1	4	3.3	2.6	....	....	....	....	....	....	....	....	....	....	....
2.2	2.4	2.7	2.5	3.2	5.8	6	5.8	4.6	5	2.3	1.8	2	1.2	2	1.2	3.6	3	1.8	2.8	1.6	1.8	2	2.6	1.6	2.6	3	2.8
4.2	3.4	3.8	4.2	4.4	2	2.5	3.7	3.6	4.6	3.2	3.5	2.7	3	3.7	3.8	3.4	.	....	....	....	....	....	....	....	....	....	....
4	1.8	2	3.6	2.8	3.9	4	4.2	1.8	5.2	5.8	3.6	0 8	1.6	1.4	0.4	0.0	1.6	....	....	....	....	....	....	....	....	....	....
1.4	1 8	2	1.4	1.8	2.4	1.6	3.4	3.2	4.2	4	5.4	4.6	3.2	2.5	2	1.8	1.6	1.4	1.4	1.8	3	1.8	1 6	2.8	1.8	1.8	1.6
1 8	2	4.6	4.6	5	4	3	2	2.6	1	3.2	3	3	1	1.2	0	0.6	2.2	1.4	0.8	0.4	0.2	0.4	1	2	2.2	3.2	2.8
2.6	2.4	1	1	2	2.6	1.6	1.8	1.6	2.8	1.4	3.8	2.4	1.4	2	3	2.5	3.2	2.8	1.9	5.4	2.2	2	2.4	2.4	3.4	3.4	3
1.8	2	2.8	2.2	3	4.2	4.6	3.2	4	4.2	4	3.8	3.6	3.8	3.6	3.4	3 3	3	3	2.6	3	2.6	2	2	3.2	4	2	1.6
1.8	2	1.8	1.4	1.8	3.4	3.4	4.8	5.4	6.6	6.8	5	3.6	2.8	1.6	2	1	2	2	3	3.6	2	1	1	1	0.6	0 4	7.2
3.7	4.2	4.6	4.2	4.2	3	3.6	3	2.6	2.6	0.3	1.6	2	2	1	2	1	2	2.6	2.4	1	2.6	. .	2 4	2.4	0.6	3	3
1.2	1.2	1.8	2	2.2	1	2	3.2	3.2	2.4	2	1.2	2.3	2	1.6	1	1.6	2.4	2	4.2	3	3.5	3.2	3	2.6	1.8	1.4	2.4
2.1	2.1	2.1	2.2	2	....	....	....	3.2	4.5	4.2	5	5.4	5	4.3	5	4.2	3.8	4.2	5.2	4.2	3.1	3	2.2	4.2	2.2	2.1	3.1
2.8	3.2	2.8	2 6	3.4	4	2	4.6	4.9	3.6	4.6	5	4	4.2	4.6	3	2	2.8	2.2	1.2	2	2.2	1.4	2.2	1.2	2	1.6	1.6
1.2	2	1.4	1.6	1	1.4	1	2	1	1	1.6	1	1.4	1.6	2.6	1.6	3	3	4.2	4.4	4.2	4	3	2.6	2	1.2	5	2
1.6	1.6	2	1.6	1	3	3	5.6	5	5.8	5.4	4.4	4	4	3.4	2	2.4	2	2.4	2.4	1.6	1	1	2	2	1.2	2	1.2
4	4.4	4	3	2.4	2.2	3.4	3.2	2	2.4	2.2	3.4	3	2.5	2.4	2.6	3.4	3.6	2.8	3.4	3.3	3	2.6	1.6	1	1.6	2 2	...	....
1.6	1.8	1.4	2	2	0	1.2	2	1 7	3	2.8	2	5.4	3	5	4.3	2.8	2	2	3	1.4	2	1.8	2.4	2	2.3	2.2	2.6
3	3	4	5	5	6.4	5.6	6.4	5.6	5.2	5.8	4	4.2	2.4	3.6	1	2	3	3.2	....	....	....	....	....	....	....	....	....
1	1.2	5	4 1	5	4	4.4	4.7	4	3.4	3.3	2.3	3.2	2.7	3	2.4	2	1.6	1.7	1	1	1.6	....	1.4	2.1	2.4	4	3
1.7	2.3	3.2	3.6	5.6	5.1	5 4	4.2	3.6	3	4.6	3.8	3	1 4	1	0.2	1.4	0	1	1.8	1.2	1	0.5	1.5	2	3.6	4	1.2
1	3.2	2	2.2	2.4	4	3.8	4.6	5.2	5	4.7	5	5	4.4	1.3	1	1	1.6	1	1.3	1.3	1	0	99.6	0.4	0	2.8	1.6
1 5	1.4	1.7	1.7	2.2	1.8	2	2	3.7	4	1.2	5	1.2	1	3.8	4.8	4	4	4	4	3.8	3.2	2.6	2.8	1	2.4	4.2	....
1.4	0.6	1.4	1 4	1.6	1.4	1 5	2	1.4	1.8	4	3.6	4.3	3	1	1.7	1.8	4.1	4	3.2	3.1	2.5	2.2	1.9	2.7	2	1	1.8
1.4	1.6	1.4	1.4	2.5	2.2	3.2	3.5	2.8	3.7	4	3.6	4.3	3	4	4	3.2	3.3	3.2	3	2.6	1.8	1.4	1.5	2.4	0.8	1.6	1.4
2.8	2 4	1.8	4.8	4	5	4.4	4	3	3	4	3	3	3	2.4	2.2	3	3	6	1.4	2	2	2.6	3.1	3	3	2.8	1.8
3.6	3	3	2.4	4 6	2.4	2.4	2	2.7	3	2.6	2.2	2.6
2.8	2	3	5	4.6	0.1	1.6	1.7	1 6	2	1.4	1.1	1.6
3.4	3.4	2.8	3	3.2	3 2	2.6	1.6	2.6	3	2.4	3	5
2	2	1.4	2	2	2	1.6	1.2	2	1.4	1.4	2.6	1.4
3	5	5	3	2	2.6	5.4	5.8	5	4.6	3.4	2.6	3
2.4	2.4	2	1.2	1.6	2	3	2.4	1.4	3	1.2	2.8	1.8
1.4	1.6	1.4	3	2	1.6	3.6	2	0.6	1	1.6	1.6	3.2
4.2	0.6	1	1.6	0.8	1	2	2	3.2	2	3	3.7	3
2.4	2.4	3	1	2	1	2	2	2	1.6	2.2	2.8	1
1	1.6	1	1.6	1.8	1.4	2.1	3	4.2	5	5		
3.5	2.4	2.4	4.7	3.7	3.6	3.4	2.8	3.4	4.5	2.9		
2	4.4	4	3.2	3.6	3.2	2.5	2.4	2	4.2	1	1.5	1.0
2	2.6	2	2	1.5	3	2.7	2	1.6	1,9	1.8	2	1.8
2	2.5	2.5	3.7	3.5	4	1.9	1.6	2	2.4	2	2.6	3
2.1												
4.6	3.6	3.1										
3	2.7	3.5	3.8	4	3.4							
5	4.2	2.6	2.6	2.6	2.5	2.4	2.8	2.3	2.3	2	2.5	2.5
4	3.8	3	2.5	2	2.5	1 7	2.5	4 3	2.4	2.4	2.8	2.4
2.8	2.6	2.4	3	2.7	2.6	2.3	3	2.4	2.9	3.3	2.2	3.7
3	2.2	3.6	3.6	2.4	2.2	2 4	3.6	2 4	2.3	2.2	2.2	2.4

31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58
2	2	1.7	1.8	1.3	1.4	3.1	3	4.4	3.5	3.5	3.6	3	4.4	3	3	3	3.4	1.6	2.4	1.6	1.6	1.5	2.8	2	2.5	2.3	1.6

TABLE II, SHOWING THE DURATION AND SEVERITY IN FIFTEEN FATAL CASES OF TEXAS FEVER FOLLOWING INOCULATION WITH

No.	ANIMAL	Age	Dose	Date	Owner	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
73	Red Poll Bull	14 mos.	1 c. c.	Feb. 22, 1901	Hunter	2.4	2.8	2	2	2	7.5	6	6.2	7.7	De	ad.	Blo	ody	uri	ne	on	9th	day	.																				
7	Hereford (sucking) calf	6 wks.	1 c. c.	Apr. 7, 1901	Riverside Co	1.8	2.2	2	1.9	1.8	2.3	2	5	5.5	6	3.5	De	ad.																										
16	Red Poll Bull	10 mos.	1 c. c.	Feb. 22, 1901	Hunter	3	2	3	2	2	2	2.5	3.5	3.5	4.4	5.6	0.4	De	ad.	Blo	ody	uri	ne	on	11t	h d	ay.																		
....	Hereford Heifer	12 mos.	1 c. c.	Feb. 21, 1901	Specht	....		1	1.2	1	1.8	2 4	1	1.2	2 6	5.8	5 4	4.2	2	3	0.4	De	ad.	Blo	ody	uri	ne	ar.	on	11t	h a	nd	12t	h	day	s.									
248	Hereford Bull	20 mos.	1 c. c.	Mar. 20, 1900	O'Connor	1.2	1.6	0.4	1.2	1.2	1.2	1.2	1 2	1 6	1.2	2.6	3.7	5.1	4.4	5.4	5.2	De	ad.	Uri	ne	cle																		
102	Hereford Heifer	11 mos.	1 c. c.	Mar. 14, 1900	Weddington	2.7	2.8	2 6	2 2	2.7	2.1	2 1	5	3.3	5.2	5.6	5	4.7	5 6	4.7	1.4	4.7	3	De	ad.																				
44	Shorthorn Heifer	17 mos.	1 c. c.	Mar. 18, 1901	Landa	2.8	2 4	1	2	2.4	2	2	2	1 4	2	5.8	3.4	4.2	4	4	3.4	5	5.3	4.7	De	ad.																				
11	Hereford Heifer	23 mos.	1 c. c.	Jan. 13, 1901	March	1.5	2.2	2	3.7	2 8	1.4	1.2	2	2 2	2	4.4	2.5	3.7	7	6.5	6.8	6	5	3.5	4.5	1	2	1.6	3	De	ad.	Ab	ort	ed	on	the	19t	h d	ay.							
40	Shorthorn Heifer	20 mos.	1 c. c.	Mar. 18, 1901	Landa	2.2	2.4	2	1 2	2.4	2.4	2.4	1 4	2	2	2.2	4	5.2	5.6	4.2	2 4	1.7	3	2	1.6	3	2	2	2	1	1.6	2.4	3.2	3.4	2.6	5	4.6	6.2	3	98.	De	ad.	Ga	ve	bir
34	Hereford Bull	11 mos.	1 c. c.	Mar. 29, 1900	Rhome	3	2.4	2.6	2	1 3	2	2 8	1.7	0 5	2.7	4	5.2	5.2	4.8	2.4	3.1	3.2	4.3	1.8	1 7	2.2	2.8	2 5	2.5	1.7	2 7	2.5	2.1	2.7	2 8	2.6	3.6	1	3.6	4.6	4.7	4.3	5.2	3.2	De
43	Shorthorn Heifer	12 mos.	1 c. c.	Mar. 18, 1901	Landa	4	2	2.4	2	2	3	2.8	2	3	2 4	2 6	2.4	2.6	2	2	2.2	2 8	2	2	2 4	2 1	1.3	1	2	2.4	2.4	2.4	1.4	1.6	2.6	3 6	1 8	5	4	6.4	6	4.6	5.2	5.2	5
11	Red Poll Heifer	11 mos.	1 c. c.	Nov. 4, 1900	Green	2	2		3	2	2.2	....	2	....	4	1	2	2	3.3	3.2	4	3	2.2	3	3	3.4	2 2	3	2.4	2.4	2.2	1 4	1	1	1.6	1	2	2 4	3.6	4.4	4	5.4	5.4	5.4	3.8
90	Red Poll Heifer	13 mos.	1 c. c.	Feb. 22, 1901	Hunter	2.2	2	2.2	1.2	2	8.2	6.6	6	7.2	5.8	2.7	1.3	2.5	1.2	1.5	1.8	2.4	2.2	4.2	0.4	4.6	5.7	6	5.8	4	1.4	1.1	1.5	1.2	1 4	2	1 2	1.2	0.8	1 4	1.5	1	1.2	2.2	1.6
5	Shorthorn Bull	14 mos.	1 c. c.	Dec. 7, 1900	Green	2 4	2.2	2	1	1	4	5.2	5.2	6.2	5	1	1 4	1 8	2.2	3.4	3.2	4	4	4	4	4.2	3.2	3.2	2	1.2	2.4	2	3	3	1	1 6	2 2	3	1.6	1.4	2	1 6	1.4	2.8	3.8
1	Shorthorn Bull	12 mos.	1 c. c.	Nov. 4, 1900	Green	3	2		2		2	....	2	....	2.2	2.1	2	3.4	4	5	4.4	4	3	3	3.4	3	3.4	2	2.2	2 2	2 6	1.4	5	2	3	2	3	4	4.4	2.8	3.4	4	4	4	4.8

EVERITY IN FIFTEEN FATAL CASES OF TEXAS FEVER FOLLOWING INOCULATION WITH BLOOD.

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
ne	on	9th	day.																																									
Blo	ody	uri	ne	on	11t	h d	ay.																																					
3	0.4	De	ad.	Blo	ody	uri	ne	on	11t	h a	nd	12t	h	day	s.																													
5.4	5.2	De	ad.	Uri	ne	cle	ar.																																					
4.7	1.4	4.7	3	De	ad.																																							
4	3.4	5	5.3	4.7	De	ad.																																						
6.5	6.8	6	5	3.5	4.5	1	2	1.6	3	De	ad.	Ab	ort	ed	on	the	19t	h d	ay.																									
4.2	2.4	1.7	3	2	1.6	3	2	2	2	1	1.6	2.4	3.2	3.4	2.6	5	4.6	6.2	3	98.	De	ad.	Ga	ve	bir	th	to	cal	f o	n 2	5th	da	y.											
2.4	3.1	3.2	4.3	1.8	1 7	2.2	2.8	2 5	2.5	1.7	2 7	2.5	2.1	2.7	2 8	2.6	3.6	1	3.6	4.6	4.7	4.3	5.2	3.2	De	ad.																	
2	2.2	2 8	2	2	2 4	2 1	1.3	1	2	2.4	2.4	2.4	1.4	1.6	2.6	3 6	1 8	5	4	6.4	6	4.6	5.2	5.2	5	De	ad.																	
3.2	4	3	2.2	3	3	3.4	2 2	3	2.4	2.4	2.2	1 4	1	1	1.6	1	2	2 4	3.6	4.4	4	5.4	5.4	5.4	3.8	2.2	3.4	0.6	De	ad.	Sa	nd	im	pac	t i	o n.									
1.5	1.8	2.4	2.2	4.2	0.4	4.6	5.7	6	5.8	4	1.4	1.1	1.5	1.2	1 4	2	1 2	1.2	0.8	1 4	1.5	1	1.2	2.2	1.6	5	4.7	3.2	98.2	De	ad.	Th	ird	fev	er.										
3.4	3.2	4	4	4	4	4.2	3.2	3.2	2	1.2	2.4	2	3	3	1	1 6	2 2	3	1.6	1.4	2	1 6	1.4	2.8	3.8	3.6	3	4.4	5.2	4.4	3.8	De	ad.	Th	ird	fev	er.							
5	4.4	4	3	3	3.4	3	3.4	2	2.2	2 2	2 6	1.4	5	2	3	2	3	4	4.4	2.8	3.4	4	4	4	4.8	4	4.4	4	4	4.6	5	5	5	4 6	3	4.4	4	4	4.4	3	2.6	3	De	ad.	

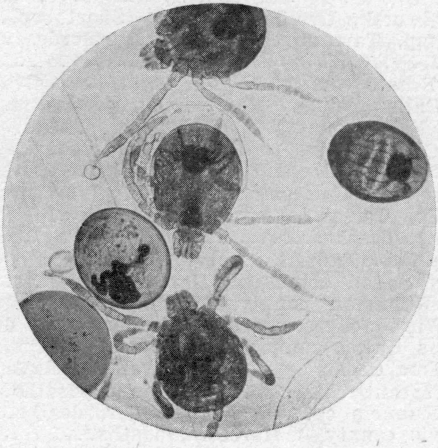
TABLE SHOWING THE NUMBER OF ANIMALS INOCULATED FROM NOVEMBER, 1899, TO NOVEMBER, 1901, THE NUMBER OF DEATHS FROM FEVER, THE BREEDS, THE LOCATION OF THE ANIMALS AND THEIR OWNERS.

A. & M. College, Brazos county, 1 Holstein, deaths..... 0
Frank Anson, Coleman county, 20 Hereford bulls, deaths..... 4
Brown & Bell, Bexar county, 17 Herefords, deaths..... 2
J. W. Burgess, Tarrant county, 46 Shorthorns, deaths..... 6
J. W. Cary, Indian Territory, 90 Shorthorns, 3 Herefords, deaths..... 18
C. T. Curry, Falls county, 3 Polled Durhams, deaths..... 0
H. W. Coit, Collin county, 30 Shorthorns, deaths..... 0
J. T. Day, Wise county, 35 Shorthorns, deaths..... 6
A. J. Davis, Cooke county, 14 Shorthorns, deaths..... 1
C. J. Eppwright, Travis county, 4 Shorthorns, deaths..... 1
T. C. Frost, Bexar county, 2 Shorthorns, deaths..... 0
H. Fuchs, Washington county, 1 Red Poll, deaths..... 0
Gibbons & Smith, Lamar county, 20 Shorthorns, 8 Herefords, 7 Poll Angus, deaths..... 1
D. C. Giddings, Washington county, 15 Shorthorns, deaths..... 1
P. Greenwade, Hill county, 12 Shorthorns, 3 Polled Angus, deaths. 0
J .F. Green & Co., Dimmit county, 65 Shorthorns, 25 Poll Durhams, 25 Red Polls, deaths..... 10
R. G. Hallum, Brown county, 8 Shorthorns, deaths..... 0
A. Hamilton, DeWitt county, 4 Herefords, deaths..... 0
S. Harrison, Tarrant county, 2 Shorthorns, deaths..... 0
S. J. Hernstadt, Limestone county, 2 Herefords, deaths..... 0
T. Hill, Collin county, 15 Shorthorns, deaths..... 0
W. H. Hollingsworth, Uvalde county, 1 Shorthorn, deaths..... 0
J. F. Hovenkamp, Tarrant county, 25 Herefords, 2 Shorthorns, deaths..... 1
Howell Bros., Brazos county, 23 Red Polls, deaths..... 1
P. B. Hunt, Dallas county, 12 Shorthorns, deaths..... 3
C. T. Hunter, Falls county, 36 Red Polls, deaths..... 10
W. S. Ikard, Clay county, 16 Herefords, deaths..... 0
J. H. Jennings, Caldwell county, 24 Red Polls, deaths..... 4
Kenedy Pasture Co., Cameron county, 57 Shorthorns, deaths... 9
Landa Cattle Co., Comal county, 32 Red Polls, 15 Shorthorns, 12 Poll Durhams, deaths..... 8
Wm. Lanius & Son, Fannin county, 16 Shorthorns, deaths..... 3
Lucas & King, Goliad county, 3 Herefords, deaths..... 1
T. McGinnis, Kauffman county, 6 Shorthorns, deaths..... 1
McFaddin & Wise, Jefferson county, 2 Herefords, deaths..... 0
F. Mayer & Sons, Sutton county, 22 Herefords, deaths..... 0
March Bros., Tom Green county, 13 Herefords, deaths..... 1
C. Maloney, Tarrant county, 2 Shorthorns, deaths..... 1
C. S. Miller, Runnels county, 2 Red Polls, deaths..... 0
L. Noton, Travis county, 1 Hereford, deaths..... 1
F. Nusom, Goliad county, 18 Herefords, deaths..... 0
Thos. O'Connor, Victoria county, 3 Herefords, deaths..... 1
C. W. Osborn, Hill county, 9 Red Polls, deaths..... 0
E. S. Peters, Robertson county, 9 Red Polls, deaths..... 0
W. A. Ponder, Denton county, 1 Jersey, deaths..... 0
Primm Bros., Bastrop county, 35 Red Polls, deaths..... 2
J. H. Ross, Limestone county, 9 Red Polls, deaths..... 0
W. A. Rhea, Collin county, 50 Shorthorns, deaths..... 0
B. C. Rhome, Wise county, 23 Herefords, deaths..... 1
Riverside Cattle Co., Nebraska, 113 Herefords, deaths..... 8

Chas. Schriener, Kerr county, 20 Herefords, deaths..... 0
N. E. Shands, Kauffman county, 4 Red Polls, deaths..... 0
H. Specht, Wichita county, 17 Herefords, deaths..... 1
A. H. Tacquard, Galveston county, 45 Herefords, deaths..... 4
S. Waring, Concho county, 23 Herefords, deaths..... 1
A. Wangeman, Bee county, 4 Herefords, 7 Shorthorns, deaths. 0
U. S. Weddington, Childress county, 25 Herefords, deaths..... 2
C. F. Woods, Fayette county, 20 Shorthorns, deaths..... 2
T. D. Wood, Victoria county, 14 Sussex, deaths..... 0
V. Weiss, Goliad county, 1 Hereford, deaths..... 0

Total number cattle, 1251; total deaths.....116

January 13, 1902.



TICK EGGS AND YOUNG TICKS.