

T H E S I S

A STUDY OF THE EFFECT OF COCCIDIAL DYSENTERY
ON THE RATE OF GAINS MADE BY STEER
AND HEIFER CALVES FATTENED
ON DIFFERENT RATIONS
IN THE FEEDLOT

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Submitted by
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for the Degree of Master of Science
Colorado Agricultural College
Fort Collins, Colorado
July 18, 1927.

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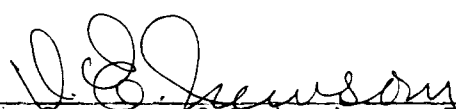
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Fort Collins, Colorado
July 18, 1927.

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THIS THESIS HAS BEEN APPROVED AND RECOMMENDED FOR
THE DEGREE OF MASTER OF SCIENCE


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A STUDY OF THE EFFECT OF COCCIDIAL DYSENTERY ON THE RATE
OF GAINS MADE BY STEER AND HEIFER CALVES FATTENED
ON DIFFERENT RATIONS IN THE FEEDLOT.

INTRODUCTION

The demand of the livestock markets for lighter cuts of beef has brought about an increased fattening of younger cattle and especially calves. Cheaper and more economical gains can be put on calves than older cattle, but at the same time more care is required in fattening calves than older cattle. Calves have been found to be more susceptible to disease. Especially has this been true with reference to coccidial dysentery. March⁴ reports that this disease occurs principally in calves about six months old with some cases in yearlings and two year old cattle. Nollet and Otten¹ found by testing calves and cows for coccidia that from sixteen calves seven showed a positive reaction whereas only two out of sixteen tests with cows were positive.

Outbreaks of coccidial dysentery, more commonly spoken of as bloody diarrhea and indicated by bleeding from the rectum, have occurred in several feedlots throughout Colorado causing an apparent heavy loss in weight of the infected animals and in several instances death.

The present knowledge concerning the disease is rather limited. It was not until 1878 that Zürn reported

coccidia in the intestines of a calf which died of severe enteritis. Coccidiosis in cattle was first observed by Zschokke and Hess in 1892 in Switzerland. Since that time coccidia have been found in cattle by various observers, especially in tropical and subtropical countries and to some extent in temperate climates. Although coccidiosis is a common disease in Denmark, France, Switzerland and North Germany, the disease had not been noted in the United States up to 1911. Since that time, the existence of the disease has been reported in the Pacific Northwest, chiefly Washington and Oregon, and in 1918 it broke out⁴ in New Jersey. Montana also reports the occurrence of the disease. An outbreak of coccidiosis was evidenced at the Colorado Agricultural College in a calf feeding experiment in 1924-25.

The life cycle of the coccidia organism, according to⁵ Hutyra and Marek, is divided into twenty different stages, the completion varying from two to six months or even longer depending on environment.

Since coccidia are known to be very resistant to heat, cold and ordinary disinfectants and because the life cycle of the parasites is still obscure, the treatment is largely symptomatic, and prophylactic measures can only be used⁶ against probable sources of infection. Way and Hagen.⁵ Hutyra and Marek state that sources of infection are:

pools of water, damp places in pastures, feed, unsanitary quarters, lowered resistance of the animals, and adult animals which are infected but resistant.

The disease is not only confined to cattle among our domestic animals. Nollet and Otten¹ found coccidia in cattle, hogs, goats and sheep. Hutyra and Marek⁵ refer to coccidial dysentery in cattle, sheep, goats, dogs, cats, chickens and turkeys.

According to Beach and Davis², the disease is successfully controlled in chickens by the use of milk or buttermilk which produces acidity in the intestinal tract and ceca and also stimulates rapid growth thereby increasing the bird's resistance. Coccidiosis is no longer a serious menace to the poultry industry. No satisfactory method for controlling the disease in cattle being fattened under commercial conditions has yet been found however and consequently its effects on gains of calves in commercial feedlots is still a serious problem.

PLAN OF THE CALF FEEDING EXPERIMENT

An outbreak of coccidial dysentery in one lot among the calves being fattened in a feeding experiment at the Colorado Agricultural Experiment Station seemed to offer an opportunity to study the effect of this disease on the gains of the calves.

The experiment in which eighty head of grade Hereford calves were being fed was the third of a series of calf feed-

ing experiments carried on at the Colorado Station. Some trouble with coccidiosis had been experienced during the first test but none during the second.

The calves had been allotted according to weight, sex, origin, grade, color and type into eight lots, making all lots as nearly the same as possible.

The different rations fed in the test were as follows:

- Lot No. 1: Ground Barley, Cut Corn Fodder, Wet Beet Pulp, Cottonseed Cake, Alfalfa.
- Lot No. 2: Ground Barley, Corn Silage, Wet Beet Pulp, Cottonseed Cake, Alfalfa.
- Lot No. 3: Ground Barley, Corn Silage, Dried Beet Pulp, Cottonseed Cake, Alfalfa.
- Lot No. 4: Ground Barley, Corn Silage, Dried Molasses Beet Pulp, Cottonseed Cake, Alfalfa.
- Lot No. 5: Ground Barley, Corn Silage, Dried Beet Pulp, Linseed Oil Cake, Alfalfa.
- Lot No. 6: Ground Corn, Corn Silage, Dried Beet Pulp, Linseed Oil Cake, Alfalfa.
- Lot No. 7: Ground Barley, Wet Beet Pulp, Cottonseed Cake, Alfalfa.
- Lot No. 8: Ground Barley, Pressed Beet Pulp, Cottonseed Cake, Alfalfa.

It was the plan of the ration experiment to feed these calves for a period of 190 days taking records of feed fed and weights and also recording the gains in weight made by the calves.

Group weights were taken of the calves every ten days and individual weights every thirty days in all lots.

OUTBREAKS OF THE DISEASE

The first outbreak of coccidiosis occurred February 16 in Lot No. 1. Blood was noticed in the droppings and an analysis revealed the coccidia organism. A second outbreak of the disease occurred in lots No. 7 and No. 8 on April 13 and the third and more general outbreak came May 29 in Lots No. 3, No. 4 and No. 5, with a recurrence of the disease in lots No. 7 and No. 8.

SYMPTOMS OF THE DISEASE

The first symptoms of the disease are shown by the appearance of blood and mucus in the feces which is always on the outside of the droppings in the early stages, but which may later be distributed throughout. The animals are dull, the skin becomes tight, the hair-coat rough and the tail and buttocks are stained with blood and feces. The abdomen gradually assumes a tucked-up appearance in the more severe cases. The feces are scanty and their passing may be accompanied by some straining.

CONTROL MEASURES

Preventative measures were taken at once in order to check a further spread of the disease. All animals showing signs of bleeding were dosed, because previous results (Colorado Calf Feeding Experiment 1924-25) seemed to indicate that unless the infected animals were treated, the subsequent bleeding would be very heavy and associated with a heavy loss in weight.

Medicinal Measures.

Several kinds of treatments were used in order to stop the loss of blood as soon as possible. Searle tablets, containing iron, strychnine and arsenic, dissolved in water were at first given to the calves by the drenching method. On account of the straining which this dosage produced in the calves, a mixture of salol, bismuth subgallate and mineral oil was tried. This mixture was given to the calves by means of a tube and funnel which was passed down the esophagus. No immediate results in stopping the bleeding were obtained from this dosage although it did prevent straining. A third mixture used was salol, bismuth subgallate, tannic acid and mineral oil administered in the same way as the above treatment. The results from this treatment proved no different than the same mixture without the tannic acid. In an effort to stop the excessive bleeding of one animal (No. 19) in Lot No. 1, a rectal injection was given. This dose consisted of a mixture of tannic acid and mineral oil. Almost immediate results were obtained and only twice later was blood found in the feces of that animal. A fifth treatment used on animals passing only a moderate amount of blood was a mixture of salol, tannic acid, bismuth subgallate, guaiacol and mineral oil given by means of the tube and funnel. But the action of this mixture was also rather slow. Then the same dose minus the salol was used but without getting quicker results. Finally a mixture of a pint

of castor oil plus ten to twelve drops of a creosote livestock dip was given to the calves and with the exception of two cases (No. 53 Lot No. 3 and No. 48 Lot No. 5) all bleeding was stopped almost immediately. Three successive doses of castor oil having no effect on calf No. 53 which was bleeding very heavily, the rectal injection dosage consisting of mineral oil and tannic acid was used and again favorable results were obtained and the excessive bleeding was cut down to mere traces of blood in the feces.

Other Control Measures.

The pens were cleaned out daily to provide as sanitary quarters for the calves as possible and to lessen the chance of further infection.

At the beginning of the feeding test lime had been placed in the watering troughs and had been replenished every thirty days in an effort to prevent an outbreak of coccidiosis. These troughs were thoroughly cleaned out and relimed at the time of the first outbreak of the disease. Fresh lime was put into the water every thirty days until the end of the experiment.

The grain was entirely removed from the ration in Lot No. 1 on March 6, sixteen days after the outbreak of coccidiosis, because of the possibility that the four pounds of barley fed per head daily had some influence on the bleeding. No apparent improvement could be noticed a week later and the calves were again started on two pounds of

grain and the amount was gradually increased to four pounds per head daily in four weeks time.

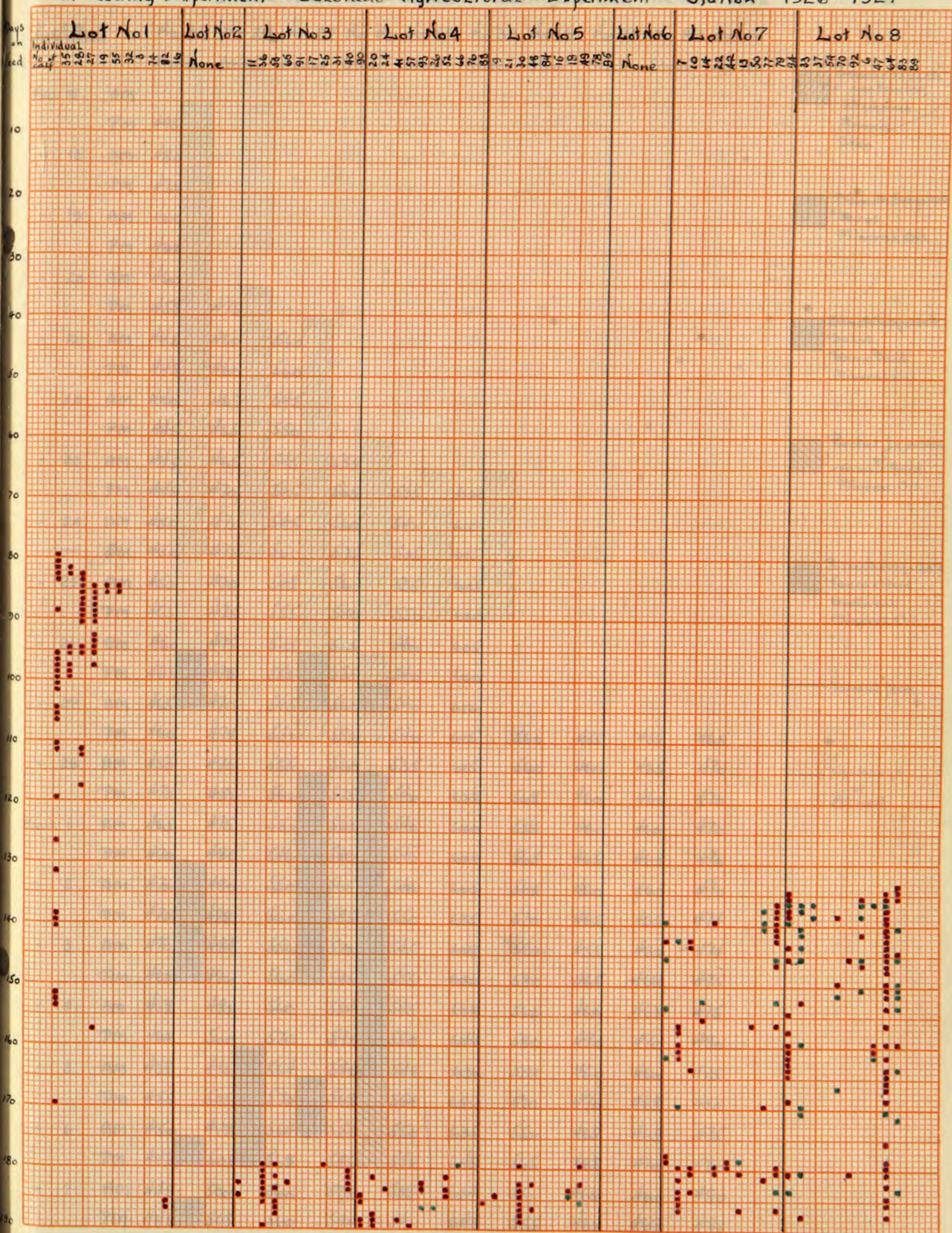
As soon as the blood was noticed in Lots No. 7 and No. 8, April 13, the grain ration was reduced from four pounds per head daily to two pounds and this amount was fed ten days. Again no improvement could be seen in the calves. The grain was then increased until eight pounds per head daily was being fed twenty-five days later. No ill effects were noticed at that time. Ten days later, May 29, a general outbreak of coccidiosis occurred in nearly all lots. All the calves were at that time getting the heaviest grain ration, eight pounds per head daily, fed during the experiment. Possibly the large amount of concentrate made conditions more favorable for the disease to get a foothold.

DAILY WEIGHTS, OBSERVATIONS AND DOSING.

In order to study the effect of the disease on individual gains of animals, it was found necessary to take daily weights of the animals affected. Morning and evening weights were at first taken but after a short time a single weight taken each morning seemed sufficient.

The animals were watched both morning and afternoon and their condition determined by the content of blood in their feces. These observations are recorded in tables No. 1, 2, 3, 4, 5, 6, 7, 8, and 9.

Table No. 1
Summary of Coccidiosis Outbreak Among Calves
in Feeding Experiment Colorado Agricultural Experiment Station 1926-1927



● = Discharge of Mucus ■ = Discharge of Blood

Table No 2
Daily Weights of Calves
With Indications of Evidence of Coccidiosis and Treatment Used

Lot No 1 No 35 No 28 No 27 No 19 No 55 No 32 No 3 No 74 No 82 No 16
Heifer Heifer Heifer Steer Steer Heifer Steer Steer Steer Steer Heifer

Feb 17 AM

PM 495

" 18 AM 480

PM 475

" 19 AM 460

PM 462

" 20 AM 460

PM 455 475

" 21 AM 445 460 560

PM 445 460 560

" 22 AM 440 465 545

PM 445 465 550

" 23 AM 445 465 545 555

PM 445 470 545 565 535 620

" 24 AM 450 472 545 560 540 610

PM 450 475 560 575 535 615

" 25 AM 450 470 545 560 535 605

PM 465 475 555 580 550 620

" 26 AM 460 475 545 565 540 605

PM 465 478 552 585 540 620

" 27 AM 465 470 545 560 540 612

PM 460 478 552 582 540 615 560 465 458 465

" 28 AM 450 470 555 560 535 615 560 460 465 470

PM 470 482 562 575 540 628 568 460 462 470

March 1 AM 465 475 552 562 540 620 558 462 460 470

PM 470 480 546 580 540 628 565 465 468 470

" 2 AM 472 480 550 565 542 622 568 460 460 470

PM 472 488 560 585 550 635 570 465 465 474

" 3 AM 470 484 556 572 545 628 562 455 462 474

PM 465 492 565 595 555 632 580 465 468 475

" 4 AM 458 482 560 584 545 628 562 462 462 475

PM 462 500 570 592 550 644 580 470 470 480

" 5 AM 458 495 564 582 548 632 558 460 460 475


PM 455 505 570 568 554 652 570 470 468 452


" 6 AM 450 498 564 580 550 635 552 465 465 475


PM 448 505 568 585 552 645 565 468 470 480


" 7 AM 445 500 560 578 538 634 552 465 460 480


PM 445 505 560 592 545 645 555 462 468 488

 Searke tablets
containing
Strychnine
Arsenic
Iron

 Bismuth Subgallate
= Salol
Mineral Oil

 Bismuth Subgallate
= Salol
Tannic Acid
Mineral Oil

 Rectal Injection
of
Tannic Acid
Mineral Oil

 Bismuth Subgallate
= Tannic Acid
Guaiacal
Mineral Oil

— Normal feces

— Discharge
of
Blood

Lat No 1 No 35 No 28 No 27 No 19 No 55 No 32 No 3 No 74 No 82 No 16

March 8	AM	452	500	558	588	552	635	662	465	465	480
	PM	445	505	560	595	545	640	568	460	464	478
" 9	AM	450	508	560	592	538	640	568	468	462	485
	PM	454	498	555	582	525	645	570	458	460	472
" 10	AM	452	505	562	585	530	644	570	465	464	485
	PM	450	510	570	595	535	652	575	462	462	482
" 11	AM	452	505	565	584	522	645	570	464	472	485
	PM	455	510	572	602	542	652	578	470	472	482
" 12	AM	458	508	578	602	544	650	580	478	470	495
	PM	460	515	582	610	548	648	584	472	466	500
" 13	AM	460	515	580	612	554	654	590	476	466	500
	PM	460	520	582	618	554	664	600	484	465	498
" 14	AM	460	514	578	610	550	655	582	482	470	494
	PM	462	528	592	628	550	668	600	490	485	500
" 15	AM	470	520	582	615	555	658	588	492	482	504
	PM	475	530	595	630	560	675	605	484	494	515
" 16	AM	465	512	585	604	548	668	588	478	495	500
	PM	475	528	595	620	555	674	596	480	482	500
" 17	AM	472	520	584	620	552	656	595	480	475	500
	PM	475	525	595	626	564	670	610	485	484	500
" 18	AM	478	524	592	625	560	662	595	482	482	504
	PM	484	535	605	630	575	675	615	490	485	510
" 19	AM	474	524	592	615	558	664	592	484	485	505
	PM	482	536	595	630	565	682	605	492	492	510
" 20	AM	478	520	585	622	555	668	592	490	484	505
	PM	492	540	605	630	564	690	614	498	496	514
" 21	AM	475	530	592	630	564	672	595	492	488	505
	PM	484	535	610	640	570	682	610	498	500	510
" 22	AM	480	526	592	630	565	675	598	478	490	502
	PM	490	542	610	638	570	688	610	500	498	514
" 23	AM	484	532	600	624	570	670	605	502	494	508
	PM	488	538		645	578	680	612	500	492	510
" 24	AM	486	532	596	634	572	670	600	496	492	502
	PM										
" 25	AM	492	540	605	630	575	674	612	502	498	516
	PM										
" 26	AM	490	538	605	636	587	674	622	504	500	510
	PM	500	540	612	634	582	686	630	510	500	510

○ Bismuth Subgallate
● Tannic Acid
● Mineral Oil
● Eucalacal

+++ Bismuth Subgallate
● Salol
● Tannic Acid
● Eucalacal
● Mineral Oil

— Normal feces

— Discharge of Blood

Lot No 1 No 35 No 28 No 27 No 19 No 55 No 32 No 3 No 74 No 82 No 16

March 27	AM	494	540	612	624	582	690	624	504	506	516
	PM	504	548	620	652	590	692	626	514	512	520
" 28	AM	502	546	618	642	584	694	632	508	516	525
	PM	512	558	626	657	600	698	634	516	526	525
" 29	AM	510	558	624	652	598	702	638	520	518	524
	PM	512	555	624	665	588	694	638	514	520	525
" 30	AM	508	544	615	654	590	685	625	514	510	520
	PM	510	560	622	650	592	695	635	520	520	530
" 31	AM	505	550	616	656	594	688	634	520	515	524
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
April 1	AM	506	558	624	648	610	690	635	522	520	525
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
" 2	AM	516	558	626	662	605	692	635	530	520	524
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
" 3	AM	518	562	632	664	610	705	648	538	528	535
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
" 4	AM										
	PM										
" 5	AM										
	PM										
" 6	AM										
	PM										
" 7	AM	520	570	650	665	615	712	654	538	540	540
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
" 8	AM	525	572								
	PM	✓	✓								
" 9	AM	525	580	645	675	610	710	650	544	545	552
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
" 10	AM	538	580	650	685	625	718	655	558	550	550
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
" 11	AM	538	582	652	675	628	718	652	552	560	554
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
" 12	AM	535	588	665	682	625	720	658	560	562	560
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
" 13	AM	550	592	670	694	640	740	670	564	568	560
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
" 14	AM	542	592	672	695	632	734	660	564	562	565
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

— Normal feces

— Discharge of Blood


No weights taken during this period

[illegible]

Table No. 1
Daily Weights of Calves

Lot No. 1		No. 35	No. 28	No. 27	No. 19	No. 55	No. 32	No. 3	No. 74	No. 82	No. 16	
May 23	AM	638	674	752	780	714	820	758	650	662	632	○ Castor Oil Sheep Dip
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
" 24	AM	632	682	745	780	704	812	772	644	676	632	— Normal feces
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
" 25	AM	640	675	752	784	718	820	774	646	675	635	— Discharge of Blood
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
" 26	AM	634	668	758	786	720	818	765	648	684	636	— Discharge of Mucus
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
" 27	AM	630	686	756	800	725	825	770	656	685	646	
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
" 28	AM	630	690	760	798	720	820	775	655	686	634	
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
" 29	AM	644	692	760	790	724	822	766	662	685	645	
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
" 30	AM	655	695	770	790	720	838	778	665	690	648	
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
" 31	AM	655	694	772	810	732	835	780	662	694	645	
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
June 1	AM	652	700	785	808	730	830	778	670	698	642	
" 2	AM	645	694	754	794	730	832	774	660	690	636	
" 3	AM	648	696	775	810	732	826	772	665	690	645	
" 4	AM	650	700	775	800	750	830	782	665	694	650	
" 5	AM	652	694	780	805	742	822	764	662	698	644 ○	
" 6	AM	658	695	784	820	750	820	778	664	700	644	
" 7	AM	660	702	780	822	750	822	786	672	706	655	
" 8	AM	662	700	786	816	745	820	786	668	702	650	

Table No 3
Daily Weights of Calves

Lot No 2		No 12	No 45	No 59	No 72	No 86	No 1	No 5	No 34	No 73	No 80	
		Steers →					Heifers →					
April 16	AM	605	712	656	672	630	672	570	744	675	695	<div>  Bismuth Subgallate Tannic Acid Guaiacoh Mineral Oil </div>
" 17	AM	600	714	760	668	635	664	565	742	676	692	
" 18	AM	600	710	750	665	625	660	565	740	670	692	
" 19	AM	596	696	742	660	618	654	560	734	656	686	— Normal feces
" 20	AM	600	715	762	672	625	660	570	745	690	690	
" 21	AM	600	705	754	664	618	665	570	725	675	704	
" 22	AM	608	715	760	675	620	670	570	734	682	700	— Discharge of Blood
" 23	AM	610	718	760	676	622	672	572	740	680	702	
" 24	AM	605	710	768	674	630	670	575	736	674	700	
" 25	AM	605	716	752	676	630	674	572	742	675	710	— Discharge of Mucos
" 26	AM	610	722	755	682	632	670	578	750	685	712	
" 27	AM	618	728	762	684	638	680	577	746	682	714	
" 28	AM	626	732	765	686	634	680	572	756	698	712	Analysis of discharge of Calf No 1 on May 4 showed no coccidia organisms present
" 29	AM	615	710	750	675	640	675	582	748	674	712	
" 30	AM	620	735	780	690	650	682	590	754	692	720	
May 1	AM	618	730	775	700	644	692	582	746	698	716	Unable to weigh May 4, 8 and 9 because of wind
" 2	AM	618	734	780	692	654	684	586	744	696	718	
" 3	AM	616	730	775	692	648	676 on 582	582	750	696	714	
" 4	AM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
" 5	AM	626	732	790	688	655	675	584	760	700	718	
" 6	AM	624	730	776	688	656	678	584	755	700	718	
" 7	AM	632	740	782	690	656	685	586	762	700	715	
" 8	AM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
" 9	AM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
" 10	AM	630	750	772	698	664	694	588	762	706	742	
" 11	AM	645	752	804	698	676	704	595	765	712	760	
" 12	AM	640	750	805	705	680	704	596	770	715	750	
" 13	AM	645	748	815	706	680	710	600	770	715	748	
" 14	AM	646	750	812	714	682	708	600	772	718	754	
" 15	AM	646	745	820	715	680	705	604	775	715	750	
" 16	AM	650	752	815	724	688	705	608	780	720	750	
" 17	AM	655	764	822	730	692	710	615	780	722	752	
" 18	AM	648	758	820	730	690	718	608	784	720	754	
" 19	AM	644	758	804	734	690	705	602	785	725	745	
" 20	AM	652	756	815	734	705	718	614	778	722	774	
" 21	AM	670	768	832	742	706	725	614	795	730	770	
" 22	AM											No weights taken
" 23	AM	670	776	834	752	730	730	620	798	738	760	

Lot No 2 No 12 No 45 No 59 No 72 No 86 No 1 No 5 No 34 No 73 No 80

May 24	AM	670	775	844	755	718	725	626	810	728	758
" 25	AM	682	792	836	770	720	722	628	812	740	765
" 26	AM	682	780	830	758	730	720	625	812	752	758
" 27	AM	676	792	840	735	732	730	632	812	758	770
" 28	AM	700	796	850	745	730	730	638	814	765	770
" 29	AM	680	785	835	738	724	722	630	810	746	775
" 30	AM	702	792	844	760	738	732	645	820	764	778
" 31	AM	680	780	838	760	735	728	625	808	750	774 ^{on}
June 1	AM	680	786	836	750	730	724	635	808	750	780
" 2	AM	684	782	830	760	730	728	630	806	745	772
" 3	AM	690	776	830	746	728	730	636	805	750	770
" 4	AM	685	786	835	760	730	728	640	812	758	782
" 5	AM	686	788	832	755	732	732	640	810	754	780
" 6	AM	692	796	832	772	740	736	645	810	750	785
" 7	AM	700	798	835	775	740	744	652	800	760	784
" 8	AM	700	796	840	770	742	740	646	812	760	786

Table No 4
Daily Weights of Calves
With Indications of Evidence of Coccidiosis and Treatment Used

Lot No 3		No 11	No 36	No 53	No 65	No 91	No 17	No 25	No 31	No 40	No 90	
		Steers →					Heifers →					
May 29	AM	700	760	832	738	730	750	820	760	688	696	○ = Castor Oil Grease Dip
30	AM	710	778	834	752	735	756	822	765	685	712	○
31	AM	710	750	806	735	735	734	782	762	672	685	○
June 1	AM	700	758	806	725	720	730	790	750	640	680	○
2	AM	696	772	802	730	720	732	800	754	660	680	▨ = Rectal Injection of Tannic Acid Mineral Oil
3	AM	685	766	815	732	725	740	798	762	652	685	
4	AM	700	770	815	740	736	752	800	770	660	700	
5	AM	700	762	818	728	734	740	796	760	660	680	— = Normal feces
6	AM	704	775	824	745	745	752	810	770	672	700	- Discharge of Blood
7	AM	702	790	825	734	745	750	810	762	664	695	- Discharge of Mucus
8	AM	705	790	825	740	742	750	820	770	670	705	

Table No 5
Daily Weights of Calves
With Indications of Evidence of Coccidiosis and Treatment Used

Lot No 4		No 20	No 24	No 41	No 57	No 93	No 26	No 52	No 66	No 76	No 88	
		Steers →					Heifers →					
May 29	AM	810	882	896	735	655	640	760	725	810	705	○ Castor Oil Grease Dip
" 30	AM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
" 31	AM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
June 1	AM	790	816	880	735	645	632 ○	755	712	792	690	— Normal feces
" 2	AM	806	826	875	732	645	632 ○	760	714	790	696	
" 3	AM	808	822	884	735	645	634	762	715	790	700	
" 4	AM	814	804	880	730	640	626	755	714	800	688	— Discharge of Blood
" 5	AM	800	820	882	725	642	632	762	714	790	698	
" 6	AM	820	816	898	735	652	640	770	725	800	706	
" 7	AM	815	840	888	730	644	636	764	716	805	694	— Discharge of Mucus
" 8	AM	820 ○	840 ○	892	742	648 ○	644	766	720	800	700	

Table No 6
Daily Weights of Calves
With Indications of Evidence of Coccidiosis and Treatment Used

Lot No 5		No 9	No 21	No 30	No 48	No 84	No 15	No 18	No 49	No 78	No 85	
		Steers				Heifers						
May 29	AM	736	810	775	644	825	772	772	772	792	652	○ Castor Oil Creosote Dig
" 30	AM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
" 31	AM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
June 1	AM	724	800	774	636 ○	825 ○	750	724	780	786 ○	635	— Normal feces
" 2	AM	722	792	790	628	816	755	722	784 ○	776	632	
" 3	AM	725	798	788	625	820	756	726	782	780	630	
" 4	AM	720	798	792	620 ○	830	758	725	780	784	622	— Discharge of Blood
" 5	AM	730	796	795	618 ○	812	764	722	792	784	630	
" 6	AM	735	805	800	615 ○	820	770	735	795	780	630	
" 7	AM	722	802	795	606	816	764	730	780	768	620	— Discharge of Mucus
" 8	AM	732	805	800	610	818	770	738	784	782	632	

Table No 7
Daily Weights of Calves
With Indications of Evidence of Coccidiosis and Treatment Used

Lot No 6		No 2	No 46	No 71	No 75	No 81	No 8	No 23	No 39	No 56	No 87	
		Steers →					Heifers →					
May 29	AM	880	726	822	795	735	702	790	732	605	690	
" 30	AM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	— Normal feces
" 31	AM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
June 1	AM	870	732	828	772	715	710	770	725	610	688	
" 2	AM	865	720	812	772	724	696	770	720	620	672	— Discharge of Blood
" 3	AM	866	726	816	772	765	698	778	725	620	666	
" 4	AM	870	735	816	775	724	705	782	732	618	670	Blood was discharged in mere traces.
" 5	AM	864	730	815	772	712	694	778	730	615	672	Analysis repeated
" 6	AM	872	730	820	785	732	702	784	734	625	680	no coccidia organisms
" 7	AM	864	725	820	780	716	704	780	726	620	674	
" 8	AM	872	732	828	782	732	710	790	740	620	684	

Daily Weights of Calves
With Indications of Evidence of Coccidiosis and Treatment Used

Lot No 7		No 7	No 10	No 14	No 22	No 42	No 13	No 50	No 77	No 79	No 94	
		Steers →					Heifers →					
April	16 AM	688	626	625	708	690	620	565	600	684	650	○ Bismuth Subgallate Tannic Acid Salol Euciacol Mineral Oil
	PM	695	628	615	720	692	632	565	600	688	650	
17	AM	695	642	634	712	692	620	568	604	686	650	○ Bismuth Subgallate Tannic Acid Euciacol Mineral Oil
	PM	690	640	630	720	702	634	568	595	684	652	
18	AM	680	625	614	700	675	620	555	588	670	638	○ Bismuth Subgallate Tannic Acid Euciacol Mineral Oil
	PM	692	645	630	715	705	630	562	594	670	646	
19	AM	665	622	615	698	678	610	545	582	665	636	— Normal feces
	PM	680	642	635	718	702	624	560	598	678	648	
20	AM	665	625	626	700	682	615	550	590	670	642	— Discharge of Blood
	PM	695	645	632	715	698	630	555	688	670	650	
21	AM	672	635	628	702	686	620	552	588	680	644	— Discharge of Mucus
	PM	688	652	632	708	695	632	558	598	686	648	
22	AM	680	635	632	695	686	622	552	590	674	635	— Discharge of Mucus
	PM	692	655	635	726	700	630	562	600	682	654	
23	AM	680	640	625	708	690	620	554	596	678	642	
	PM	670	660	635	730	706	635	565	600	690	660	
24	AM	682	648	635	718	690	622	560	598	686	646	
	PM	686	658	636	728	708	638	572	605	692	656	
25	AM	676	648	625	705	695	625	555	600	680	638	
	PM	698	672	640	736	706	648	572	600	700	662	
26	AM	678	652	628	722	698	630	570	596	685	650	
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
27	AM	680	648	634	706	690	620	560	592	678	646	
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
28	AM	680	655	636	718	710	638	564	605	682	662	
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
29	AM	678	652	628	710	700	632	565	606	676	662	
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
30	AM	680	660	642	716	700	632	562	600	675	660	
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
May 1	AM	678	672	638	726	704	625	565	612	684	680	
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
2	AM	694	682	642	738	725	640	574	610	685	676	
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
3	AM	685	676	654	726	716	630	582	622	700	672	
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
4	AM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

Lot No 7 No 7 No 10 No 14 No 22 No 42 No 13 No 50 No 77 No 79 No 94

May 5 AM 704 672 654 738 725 646 580 605 710 690

○ Bismuth Subgallate
= Iannic Acid
Guaicol
Mineral Oil

_____ = Normal feces

— Discharge of Blood

— Discharge of Mucus

Unable to weigh
May 8 and 9
because of wind

No weights taken

Lot No 7 No 7 No 10 No 14 No 22 No 42 No 13 No 50 No 77 No 79 No 94

○ = Castor Oil
= Creosote Dip

— = Normal feces

— = Discharge
of
Blood

— = Discharge
of
Mucus

May 24	AM	745	764	718	800	790	670	642	658	772	734	
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
" 25	AM	750	764	710	805	780	680	632	650	778	730	
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
" 26	AM	756	734	720	800	792	670	635	655	775	735	
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
" 27	AM	760	744	730	786	795	675	642	654	780	740	
	PM	✓ ○	✓	✓	✓	✓	✓	✓	✓	✓	✓	
" 28	AM	758	744	714	798	794	670 ○	642	648	782	742	
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
" 29	AM	752	752 ○	720 ○	796	796	682 ○	640	656	784	738	
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
" 30	AM	772	752	720 ○	815	810 ○	672	626 ○	660	795	740 ○	
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
" 31	AM	772	745 ○	720	795	798	680	638	670	794 ○	730	
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
June 1	AM	778	746	716	786	796	676	634	664	776	724	
" 2	AM	758	730	708	790	780	670	630	670	780	738	
" 3	AM	754	730	710	804	788	686	625	670	780	732	
" 4	AM	760	746	720	804	784	690	650	668	780	732	
" 5	AM	762	745	716	810	808	674	632	672	772	740	
" 6	AM	762	760	708	815	792	682	642	672	775	735	
" 7	AM	776	735	710	818	792	682	640	666	780	745	
" 8	AM	778	750	720	822	810	676	642	672	790	750	

Table No 9
Daily Weights of Calves
 With Indications of Evidence of Coccidiosis and Treatment Used

Lot No 8	No 33	No 37	No 54	No 70	No 92	No 6	No 47	No 64	No 83	No 89	
Steers →											Heifers →
Apr. 13 AM											
PM	675	570	715	765	600	594	675	626	616	600	
14 AM	668	565	700	754	600	585	668	618	600	588	
PM	672	570	715	772	600	590	670	625	600	600	
15 AM	668	555	690	755	595	584	662	612	585	578	
PM	678	565	694	782	598	585	670	635	586	584	
16 AM	680	562	692	785	592	594	680	630	680	580	
PM	688	555	684	780	588	585	665	630	575	576	
17 AM	680	564	688	790	602	592	682	624	580	582	
PM	675	568	684	784	600	600	675	625	580	585	
18 AM	670	560	680	772	596	592	672	610	582	580	
PM	680	568	692	798	600	605	678	635	585	584	
19 AM	670	560	684	768	590	595	668	624	586	580	
PM	682	568	686	782	598	606	684	628	598	588	
20 AM	675	562	685	772	592	600	668	628	580	580	
PM	690	576	692	792	600	616	686	650	580	582	
21 AM	680	560	690	774	594	605	672	624	580	582	
PM	685	572	694	792	608	610	685	640	582	586	
22 AM	680	560	688	785	600	606	676	620	578	586	
PM	694	580	700	805	608	620	692	645	588	600	
23 AM	688	565	695	782	595	610	682	626	582	584	
PM	700	592	712	806	610	625	694	634	584	592	
24 AM	686	572	698	786	602	610	688	632	590	585	
PM	695	576	700	804	608	622	688	636	588	585	
25 AM	688	574	700	794	602	615	690	632	592	586	
PM	702	586	705	808	608	624	686	642	590	590	
26 AM	682	572	695	798	602	616	684	626	582	586	
PM	694	584	714	810	615	625	692	648	580	590	
27 AM	690	570	702	800	608	616	686	630	584	590	
PM	706	596	720	826	622	624	690	646	584	594	
28 AM	684	575	705	806	610	620	686	636	582	596	
PM	702	600	715	818	615	632	695	650	582	592	
29 AM	708	586	705	805	610	622	696	646	580	586	
PM	708	600	714	826	626	635	702	650	576	610	
30 AM	702	585	714	805	612	620	694	646	580	588	
PM	710	596	720	820	624	630	705	660	?	682	
May 1 AM	702	590	716	806	610	630	694	630	584	590	
PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

Bismuth Subgallate
 Tannic Acid
 Salol
 Guaiacal
 Mineral Oil

Bismuth Subgallate
 Tannic Acid
 Guaiacal
 Mineral Oil

— Normal feces

— Discharge of Blood

— Discharge of Mucus

[illegible]

2 of No 8 No 33 No 37 No 54 No 70 No 92 No 6 No 47 No 64 No 83 No 89

May 21	AM	765	662	776	882	682	690	760	686	652	658
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
" 22	AM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
" 23	AM	769	660	782	890	682	700	780	760	650	670
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
" 24	AM	765	656	784	896	675	700	778	690	654	682
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
" 25	AM	780	662	778	888	682	702	780	700	660	672
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
" 26	AM	775	665	782	902	690	702	780	682	656	680
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
" 27	AM	784	672	794	908	695	705	790	700	670	685
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
" 28	AM	786	654	792	904	700	706	790	700	672	684
	PM										
" 29	AM	785	668	784	905	702	708	790	705	662	686
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
" 30	AM	795	670	795	914	698		792	704	662	682
	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
" 31	AM	798	672	796	900	685	695	788	765	670	685
June 1	AM	782	666	788	905	685	695	788	702	662	682
" 2	AM	772	664	788	892	684	696	784	702	645	676
" 3	AM	772	660	788	890	686	696	788	710	654	682
" 4	AM	782	670	785	890	688	710	785	704	660	682
" 5	AM	780	666	794	886	696	702	788	700	658	686
" 6	AM	788	668	802	890	695	705	790	700	666	696
" 7	AM	786	684	802	898	692	706	792	698	658	692
" 8	AM	788	668	808	900	692	708	784	704	660	694

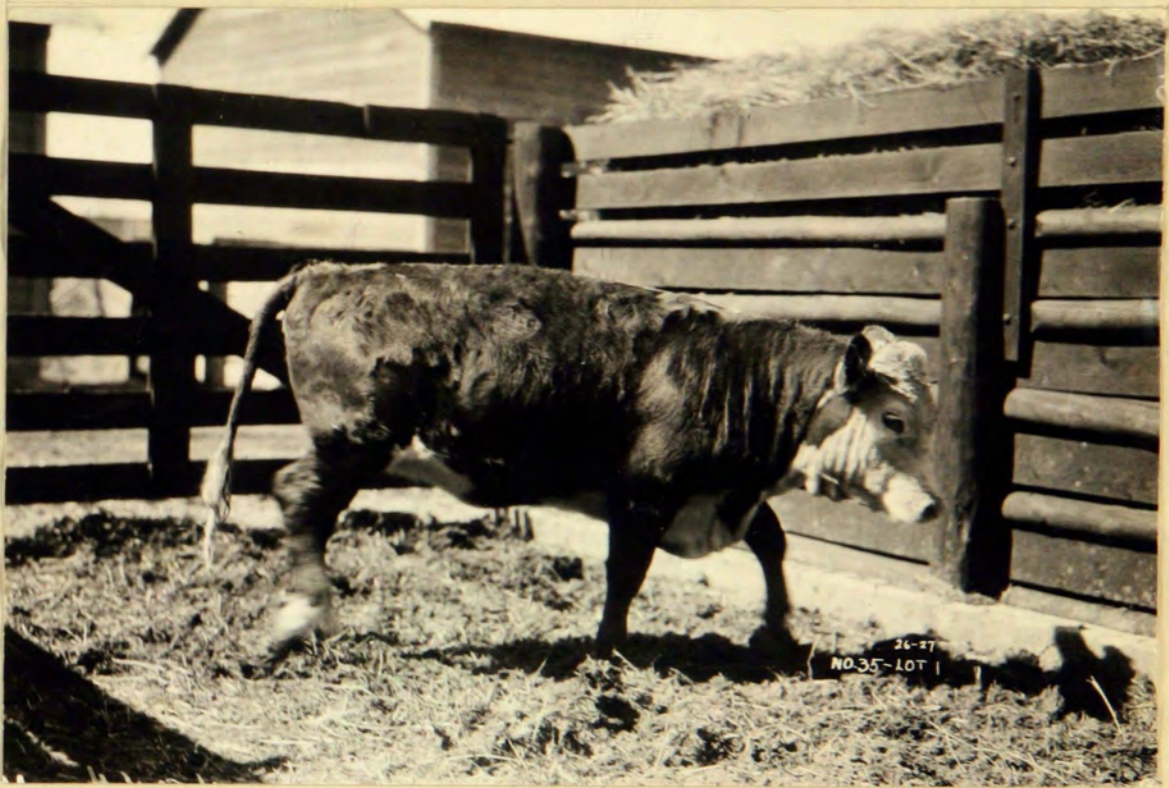
0 = Castor Oil
Cresote Dip

— = Normal feces

— = Discharge
of
Blood

— = Discharge
of
Mucus

CHRONOLOGICAL HISTORY OF AFFECTED CALVES



No. 35 - Heifer - Lot No. 1 - Table No. 2

The first blood was noticed February 16th. It was impossible to trace it to any individual until February 17th. The discharge was very great for five days causing a 45 pound loss in weight of this calf. This was followed by intermittent bleeding as indicated: February 26, March 6-March 12, March 15-March 18, March 21-March 23, March 30, April 7, April 11, April 18-April 21, May 1-May 4 and May 19. The weight of No. 35 on February 17, when bleeding was first noticed, was 490 pounds. This weight was not reached again until March 22. After March 22 only traces of blood were noted and no apparent effect on gains was evidenced.



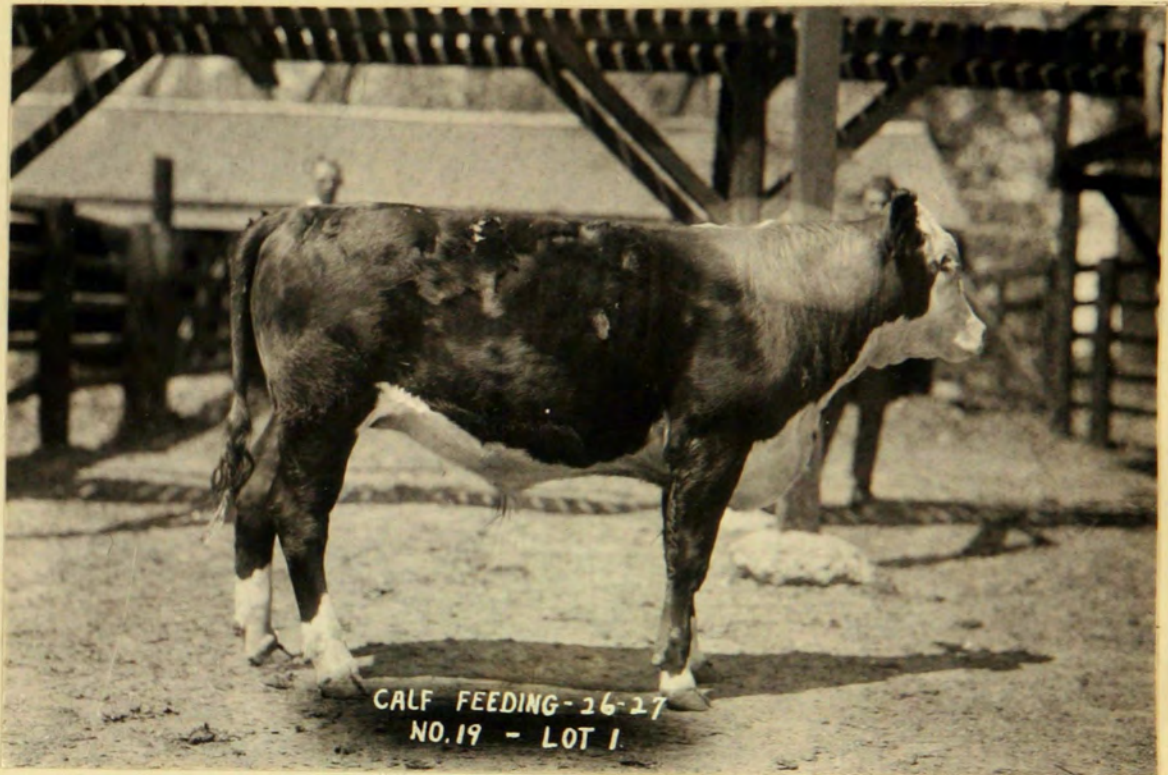
No. 28 - Heifer - Lot No. 1 - Table No. 2

Although the blood thrown off was in large amounts, it was held down to two periods, February 20-February 22 and March 5-March 11, and the weight of the animal appeared to be influenced only slightly. No. 28 lost only 15 pounds during the first period and showed no loss in weight from the beginning to the end of the second period.



No. 27 - Heifer - Lot No. 1 - Table No. 2

The initial bleeding period lasted from February 21-March 1 with a heavy loss of blood and a loss of 14 pounds in weight. Subsequent bleeding periods were: March 5-March 7, March 22-March 23 but these had no appreciable influence on weight.

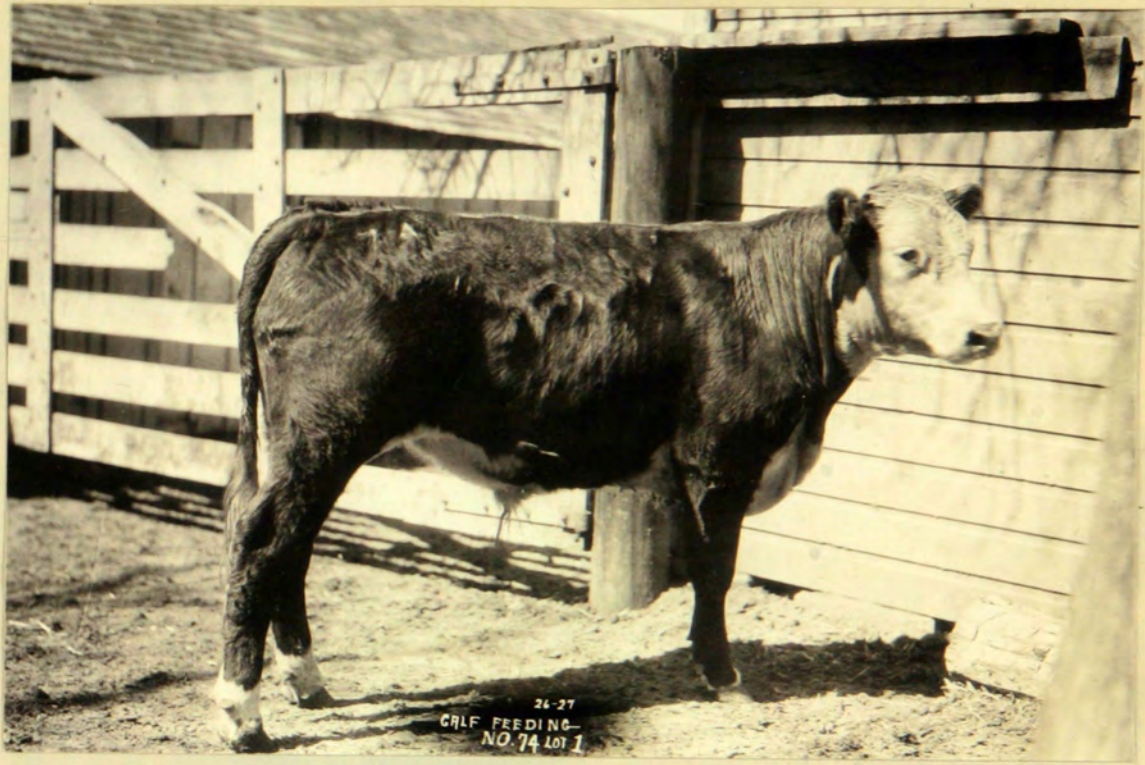


No. 19 - Steer - Lot No. 1 - Table No. 2

The first blood was noticed February 23 and the discharge was almost continuous for twelve days. Pure blood was thrown off for two days in the first period causing a loss of 24 pounds in weight, but, taking this first outbreak as a whole, normal gains appeared to be made by the animal. Traces of blood were found on March 8 and May 7 but they had no apparent effect on the gains made by the animal.

No. 55 - Steer and No. 32 - Heifer - Lot No. 1 - Table No. 2

Both these calves showed traces of blood for two days, February 23-February 24, without any noticeable effect on gain.



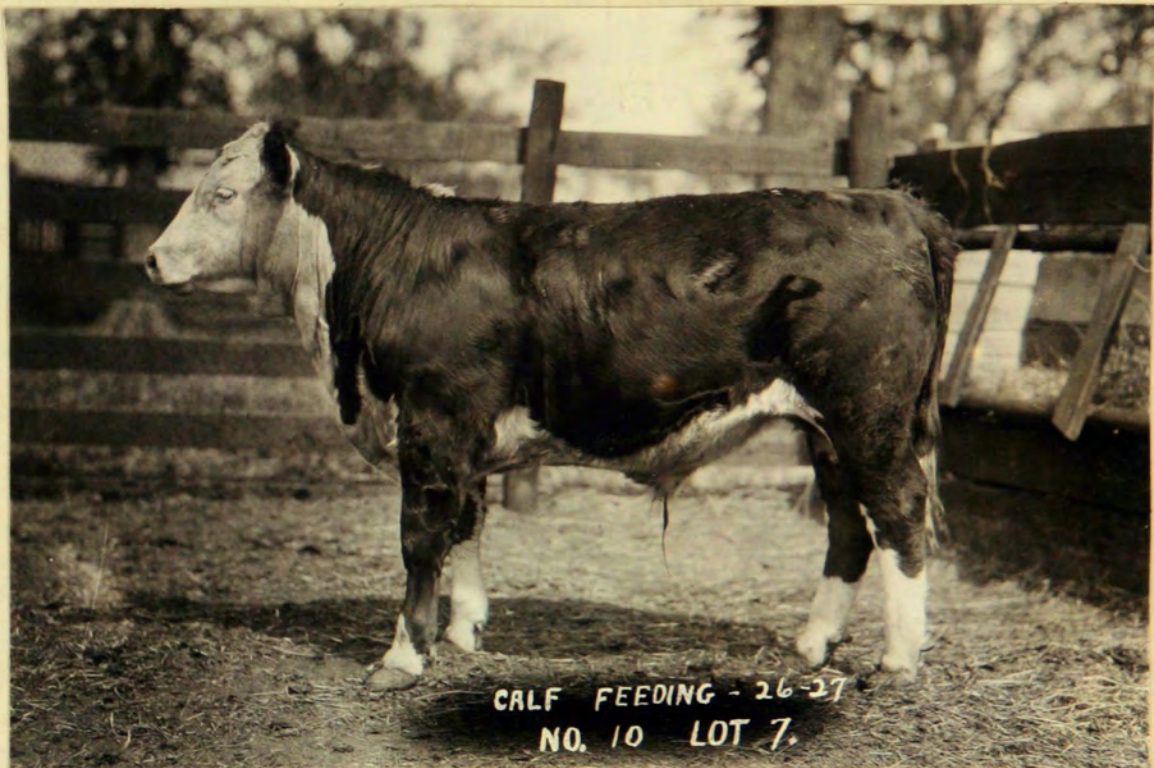
No. 74 - Steer - Lot No. 1 - Table No. 2

This animal never showed any evidence of coccidiosis yet produced a decided subnormal gain for the 190 day period. He was the lowest gainer in Lot No. 1 and one of the five lowest gainers of all eighty calves fed in the experiment.



No. 94 - Heifer - Lot No. 7 - Table No. 8

This heifer showed a heavy discharge of blood from April 16-April 23 which was accompanied by a loss of 15 pounds in weight during that period. Later, traces of blood and mucus were found on April 25, April 28, May 2, May 6, May 29-May 30, June 2 and June 5. The two day period of May 29 to May 30 brought about a loss of 10 pounds in weight but the other periods had no apparent effect on gains.



No. 10 - Steer - Lot No. 7 - Table No. 8

A mucus discharge was noticed April 22. The first blood was discharged May 6 lasting until May 12. There was no loss in weight although a considerable amount of blood was discharged. Recurrence of blood came May 19, May 29, May 31, and June 2-June 6. The latter three periods caused a loss of 7 pounds in weight during their eight day duration.

No. 14 - Steer - Lot No. 7 - Table No. 8'

The first outbreak on April 22 and 23 inclusive was without loss in weight. Some blood was found in the feces May 13. Fifteen days later a considerable amount of blood

was discharged for two days causing a loss of 10 pounds in weight of the animal.

No. 7 - Steer - Lot No. 7 - Table No. 8

Slight traces of blood and mucus were found on April 19, 22 and 25 but it was not until May 27 that any alarming amount of blood was found. The bleeding was great for about two days but was checked and had no noticeable influence on gain, nor did it recur.

No. 42 - Steer - Lot No. 7 - Table No. 8

A trace of blood was found April 19. Moderate bleeding occurred May 29 and 30 checking the rate of gain.



No. 13 - Heifer - Lot No. 7 - Table No. 8

Large amounts of blood were discharged May 28 and 29 but apparently had no influence on the weight and gain of the animal.

No. 50 - Heifer - Lot No. 7 - Table No. 8

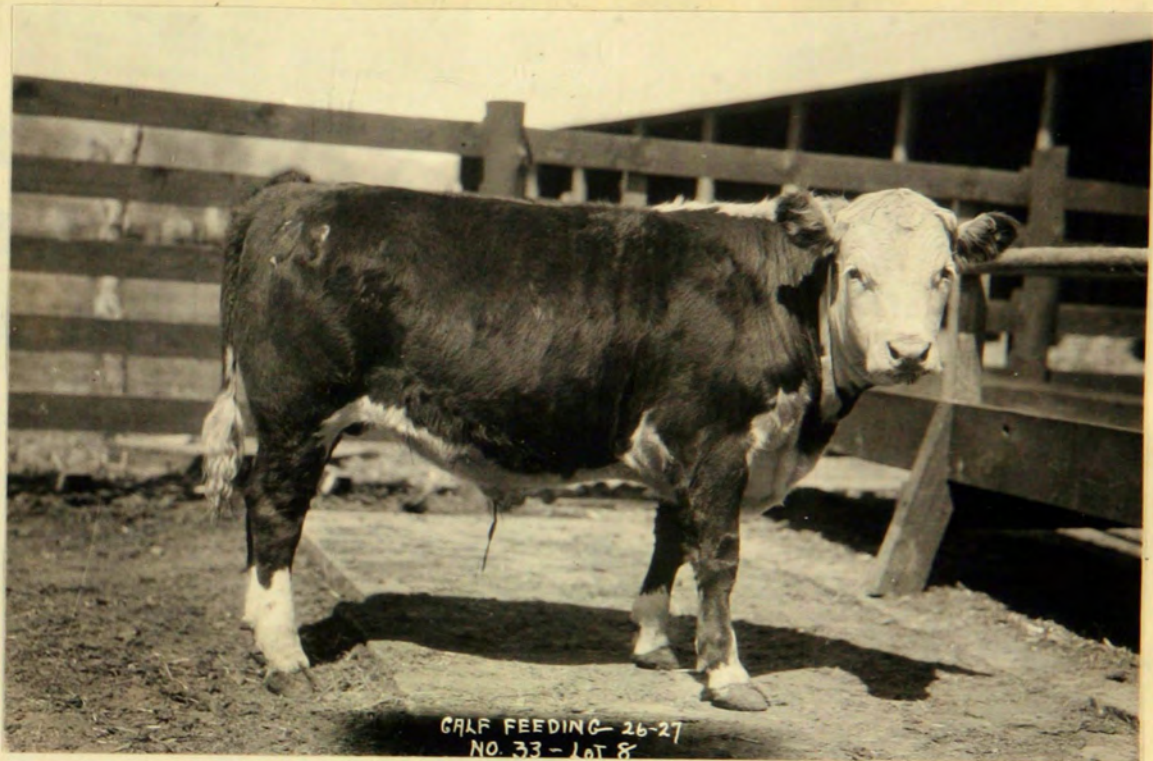
Some blood was discharged May 28, 30 and June 5. It checked the rate of gain during the last ten days.

No. 77 - Heifer - Lot No. 7 - Table No. 8

The feces showed very slight traces of blood and mucus April 17, 19, 20 and May 6, but the calf made normal gains.

No. 79 - Heifer - Lot No. 7 - Table No. 8

A trace of blood was noticed May 19. There was extremely heavy bleeding May 31 and it caused a loss of 14 pounds in weight.



No. 33 - Steer - Lot No. 8 - Table No. 9

The first outbreak of bleeding came April 14 and lasted until April 20. In spite of the quantity of blood no effects on gain were noticeable. This outbreak was followed by further indications of the disease through traces of blood on April 23, April 25, May 9-May 10, May 12-May 15, May 18, May 30 and June 2. No distinct setback in weight can be referred to.



No. 32 - Steer - Lot No. 8 - Table No. 9

Traces of blood and mucus were discharged intermittently from the time of the outbreak of coccidiosis in Lot No. 8 until the end of the feeding test but at no time could more than mere traces be detected nor could any effect be noticed on the rate of gain.

No. 64 - Heifer - Lot No. 8 - Table No. 9

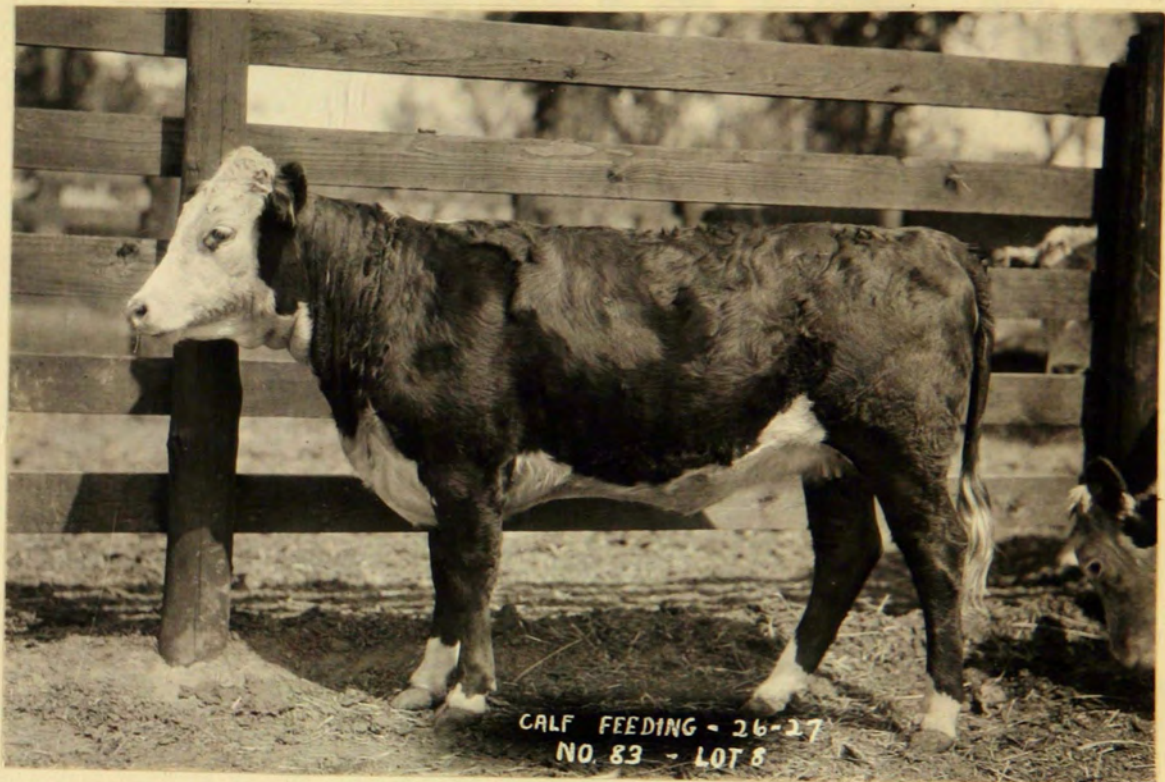
Mucus was discharged on April 16 and a trace of blood was found on May 9 and 10. It had no effect on the weight of the animal.

- No. 6 - Heifer - Lot No. 8 - Table No. 9

A moderate amount of blood was found in the feces April 25 and a faint trace of blood was noticed May 30, neither influenced the weight.

No. 47 - Heifer - Lot No. 8 - Table No. 9

Bleeding occurred on April 16, 18, 21, 25-26 and 30. The blood was present in only very small quantities and at no time was a heavy discharge found. The bleeding had no apparent effect on the weight of the animal.



No. 83 - Heifer - Lot No. 8 - Table No. 9

The initial bleeding period lasted from April 14 until May 1. The greatest loss in weight was 25 pounds with a final loss for that period of 16 pounds. Traces of blood were found May 3, 6, 9, 10, 13-16, 18, 20 and 25 but these caused no loss in weight. On May 28 an increased discharge of blood was noticed and this was followed by an almost continuous throwing off of traces of blood until the end of the test, apparently checking the rate of gain.

No. 89 - Heifer - Lot No. 8 - Table No. 9

Very heavy bleeding for three days, April 13-15 inclusive, brought about a loss of 20 pounds. On April 20, 24-25, 29-30, May 1-3, 9, 13-14, 21 and June 2 traces of blood and mucus were found but these showed no influence on weight.

No. 11 - Steer - Lot No. 3 - Table No. 4

Blood was discharged June 1 and 3 but it showed no apparent effect on the weight of the animal.

No. 53 - Steer - Lot No. 3 - Table No. 4

Very excessive bleeding occurred May 29 until June 5 with a loss of 17 pounds over the period. This was followed by another outbreak June 8.

No. 65 - Steer

The heavy bleeding on May 29 and 31 was followed by traces of blood on June 2, 4, 5 and 6. It had only a very slight influence on weight.

No. 91 - Steer - Lot No. 3 - Table No. 4

A moderate amount of blood was thrown off June 1 but it had no effect on gains.

No. 37 - Heifer - Lot No. 3 - Table No. 4

Blood was discharged May 29 and mucus June 1. The effects were unnoticeable as far as gains were concerned.

No. 90 - Heifer - Lot No. 3 - Table No. 4

Blood was discharged in fairly large amounts May 30 until June 3. It had only little effect on the rate of

gain if any.

No. 20 - Steer - Lot No. 4 - Table No. 5

Traces of blood were found June 3, 4 and 7. Heavy bleeding occurred June 8 and a trace of blood June 9. It had no influence on the final weight.

No. 24 - Steer - Lot No. 4 - Table 5

A slight amount of blood was found May 31, June 6 and 7 with a large amount of blood June 8 followed by a trace June 9. It had no effects on gains.

No. 41 and No. 57 - Steers - Lot No. 4 - Table No. 5

A very faint trace of blood was found June 2 and June 7 respectively. There was no noticeable effect on gains.

No. 93 - Steer - Lot No. 4 - Table No. 5

Heavy discharge of blood was found June 8. It did not effect the rate of gain.

No. 26 - Heifer - Lot No. 4 - Table No. 5

The feces contained a considerable amount of blood June 1 and 2, but it seemingly did not effect the weight.

No. 66 - Heifer - Lot No. 4 - Table No. 5

The animal only showed faint traces of blood on June 2 and 3 without influencing the weight of the heifer.

No. 48 - Steer - Lot No. 5 - Table No. 6

A trace of blood was noticed May 29. A discharge of pure blood in large quantities from June 1 until June 6 inclusive brought about a loss of 29 pounds in weight. A

slight discharge was noticed June 7 and June 9.

No. 84 - Steer - Lot No. 5 - Table No. 6

There was a considerable discharge of blood June 1 and a trace of blood June 5. No abnormal loss in weight can be referred to.

No. 49 - Heifer - Lot No. 5 - Table No. 6

Feces showed quite a lot of blood June 2 and mucus June 3. It had no effect on gain.

No. 78 - Heifer - Lot No. 5 - Table No. 6

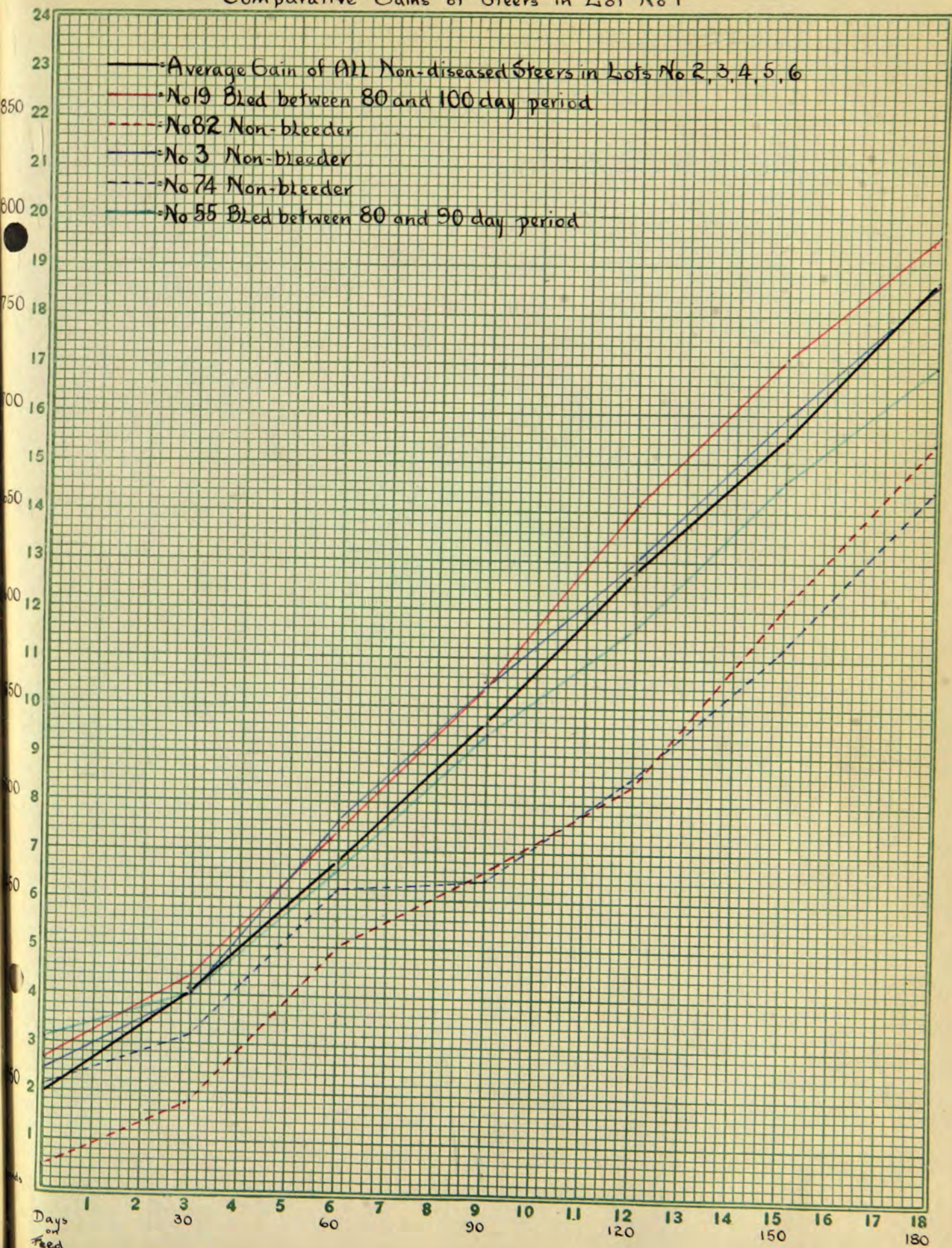
A trace of blood was found May 29 followed by more blood June 1 and mucus June 4. There was no abnormal loss in weight.

RATE OF GAIN BY CALVES IN DISEASED LOTS COMPARED WITH
THE AVERAGE GAIN OF CALVES IN THE NON-DISEASED LOTS

Only the first 180 days of the experiment are considered in the following tables because up to that time the disease was prevalent only in Lots No. 1, 7, and 8. Animals in Lot No. 2, 3, 4, 5, and 6 provided what seemed a good source for obtaining average gains of non-diseased calves for that period.

The outbreak of the disease in Lots No. 3, 4, and 5, came immediately after the 180 day period, and because of the lack of a subsequent feeding or recuperation period the gains of these animals are not considered in these tables.

Table No 10 - 46 -
Comparative Gains of Steers in Lot No 1



EXPLANATION OF TABLE NO. 10

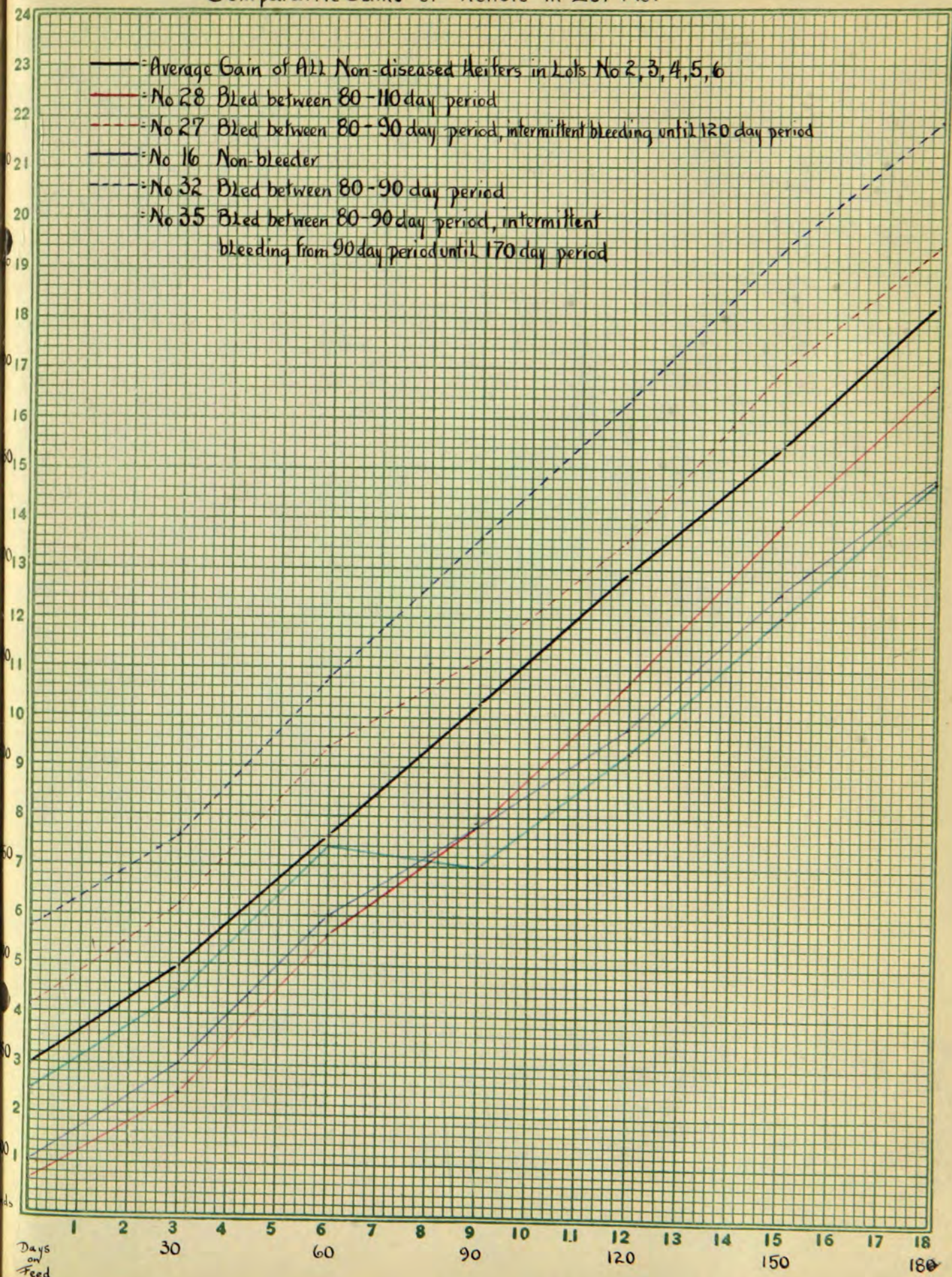
From the chart it is evident that No. 19, the heaviest bleeder among the steer calves of Lot No. 1 and the second heaviest bleeder among all the calves of Lot No. 1, made a greater gain than the average for non-diseased steer calves for the whole period of 190 days. Even during the period of actual bleeding no decrease in gain can be noticed although at one time during that period a 24 pound loss in weight was recorded. This loss in weight was followed after the bleeding period by an abnormal rate of gain putting the total gain made on an equal basis with average normal gains for that period.

No. 55 only showed a moderate discharge during the two days of bleeding and no subnormal rate of gain can be noticed during that time. But this was followed by a decline in rate of gain probably due to the lowered vitality of the calf which was indicated by shivering and apparent lack of appetite. The recuperative period again showed a slightly greater gain than normal.

No.'s 74 and 82, both non-bleeders, show an abnormal rate of gain during the 60 to 90 day period due perhaps to the rather warm weather during that period which threw them off feed and unquestionably also due to their individuality shown by their tendency for low gains throughout the entire period, especially is this true in the case of No. 74. No. 82 made good gains after the 120 day period although previous to

that time his rate of gain was below the average.

Table No 11 - 49 -
Comparative Gains of Heifers in Lot No 1



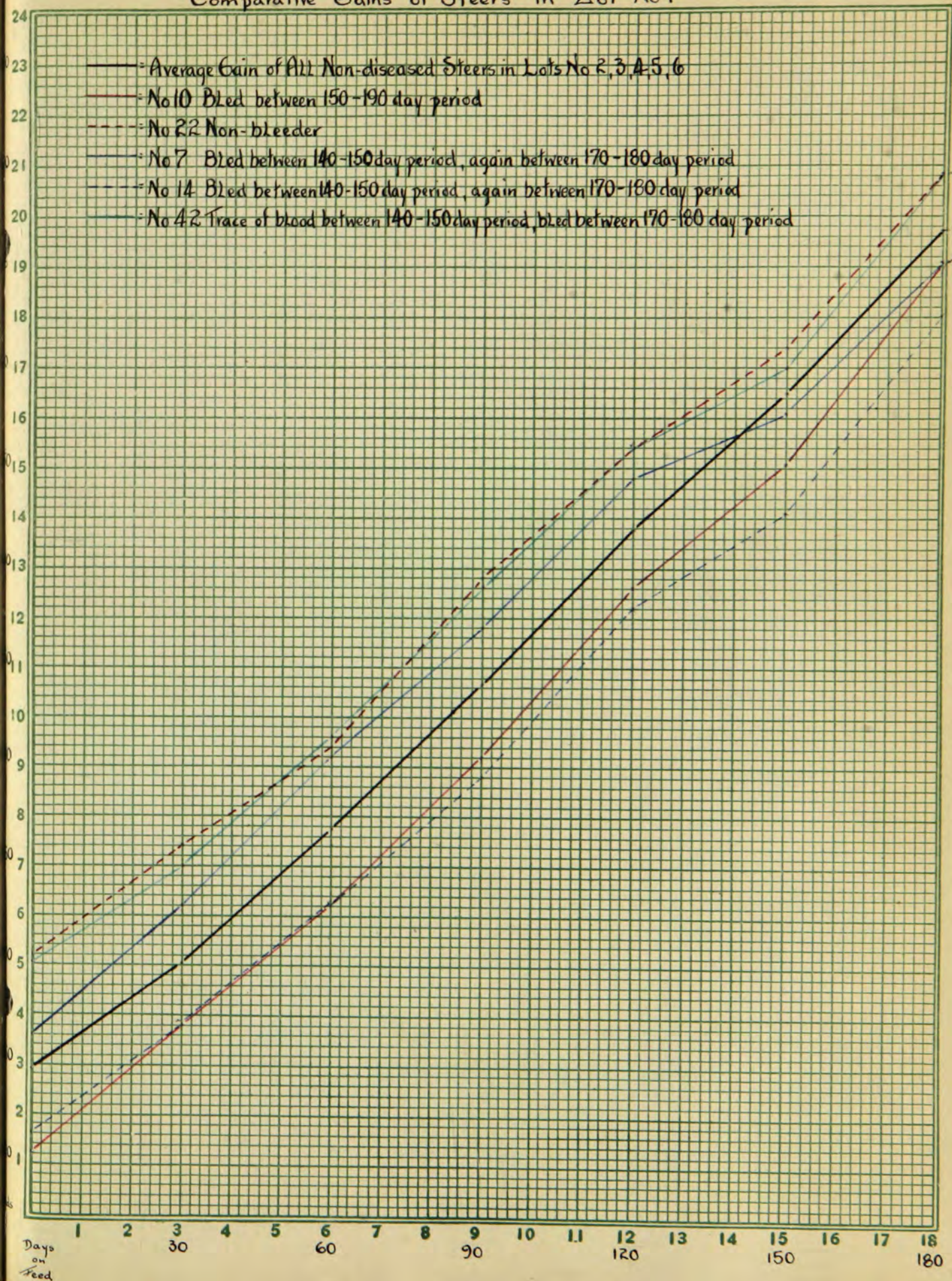
EXPLANATION OF TABLE NO. 11

That the subnormal gains during the bleeding period are followed by abnormal gains in the period of recuperation is again shown in this table. No. 35 is the exception. This is accounted for by the fact that this animal apparently never entirely recovered from the disease until the 170 day period. Even though the animal made normal gains previous to and after the heavy bleeding period, she never made up the weight actually lost. No. 35 was 15 pounds below the average for non-diseased heifers in weight at the beginning of the experiment and 85 pounds below average at the end of the test. This indicates a total loss for the 180 day period of 75 pounds which may be rather definitely attributed to coccidiosis.

Calf No. 74 (Table 10) a non-bleeder of the same lot and, therefore, under identical conditions, shows even a greater loss in weight over the same period which must be attributed to some other factor. This calf was five pounds above the average in weight at the beginning of the test and 105 pounds below the average at the 180 day period, showing a final loss of 110 pounds as compared with average gains.

Apparently coccidiosis, even in a severe form, may have no greater or even as great an effect on the rate of gain than some other uncontrollable factor or factors generally included under the term individuality.

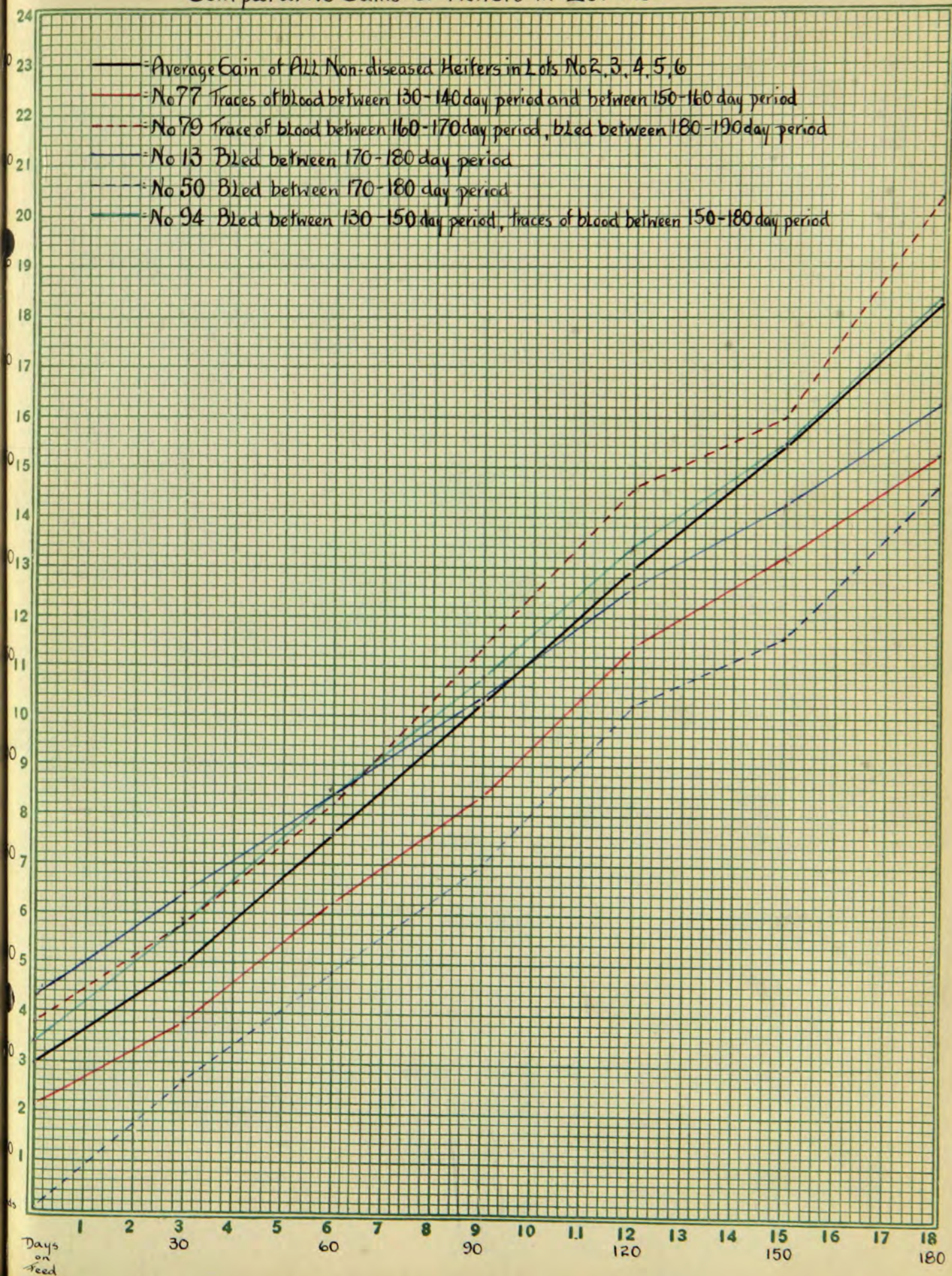
Table No 12 - 51 -
Comparative Gains of Steers in Lot No 7



EXPLANATION OF TABLE NO. 12

The general outbreak of coccidiosis came between the 140 and 150 day period and the typical check in rate of gain of the affected animals is shown in Table 12. A cut in the grain ration of the lot at that time explains the less marked drop in the rate of gain of No. 22, a non-bleeder, and No. 10 who was not affected until the 150 day period. The subsequent abnormal rate of gain was somewhat checked during the 170 day period when another outbreak of coccidiosis occurred.

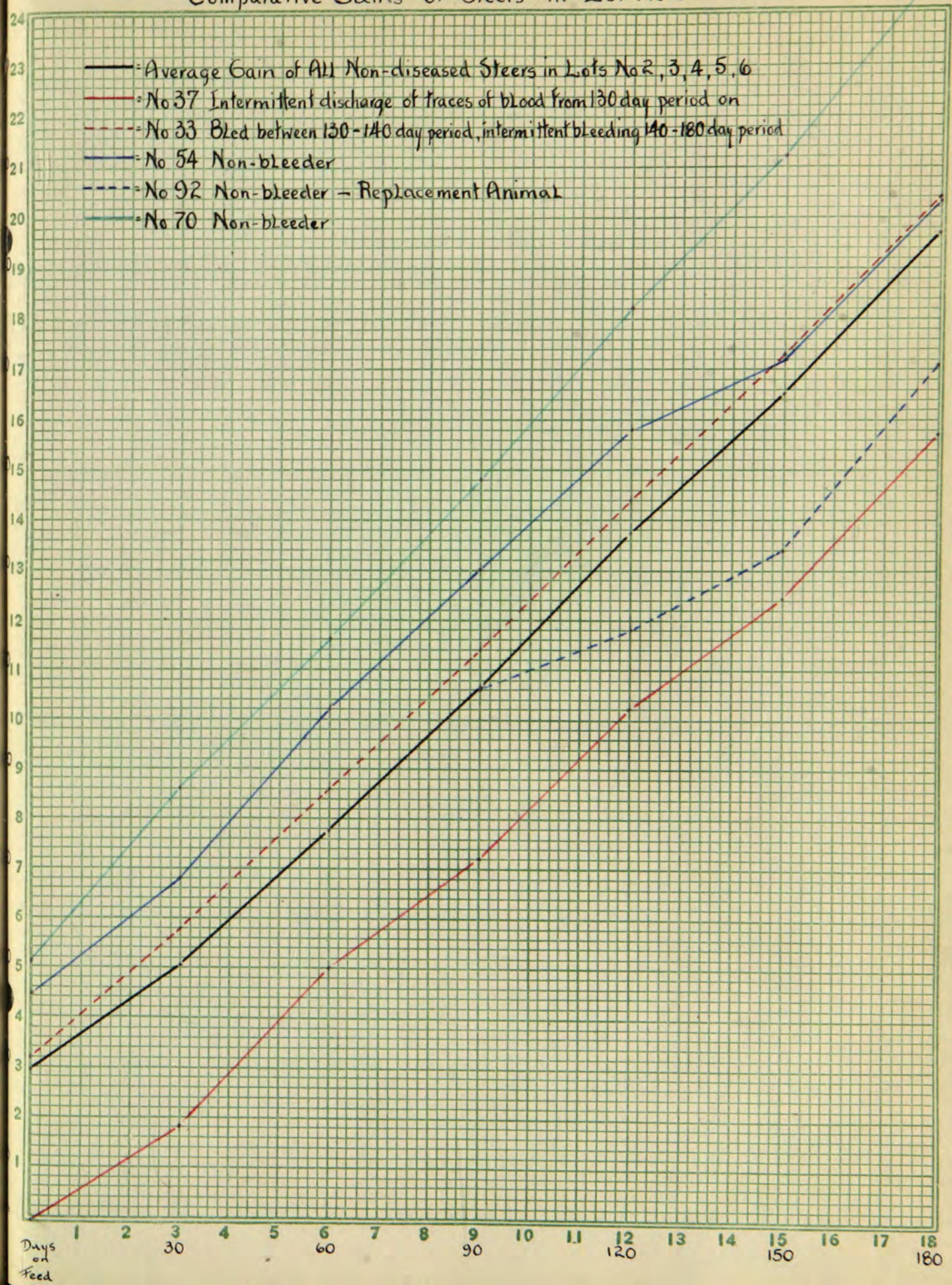
Table No 13. 53
Comparative Gains of Heifers in Lot No 7



EXPLANATION OF TABLE NO. 13

The check in rate of gain during the 120 to 150 day period is similar to that in Table No. 3 and may be due both to coccidiosis and the half grain ration fed. The gain of No. 94 is normal compared to the other animals of the lot during that time in spite of her heavy loss of blood and weight in the early part of that period. This is due to the very abnormal gains made immediately following the bleeding period. No. 13 made subnormal gains during the whole experiment and the discharge of blood for two days in the 170 to 180 day period had no noticeable effect on gains. Neither did the bleeding of No. 50 have any effect in changing her rate of gain because it was stopped by one dosage and caused no loss in weight.

Table No 14 - 55 -
Comparative Gains of Steers in Lot No 8

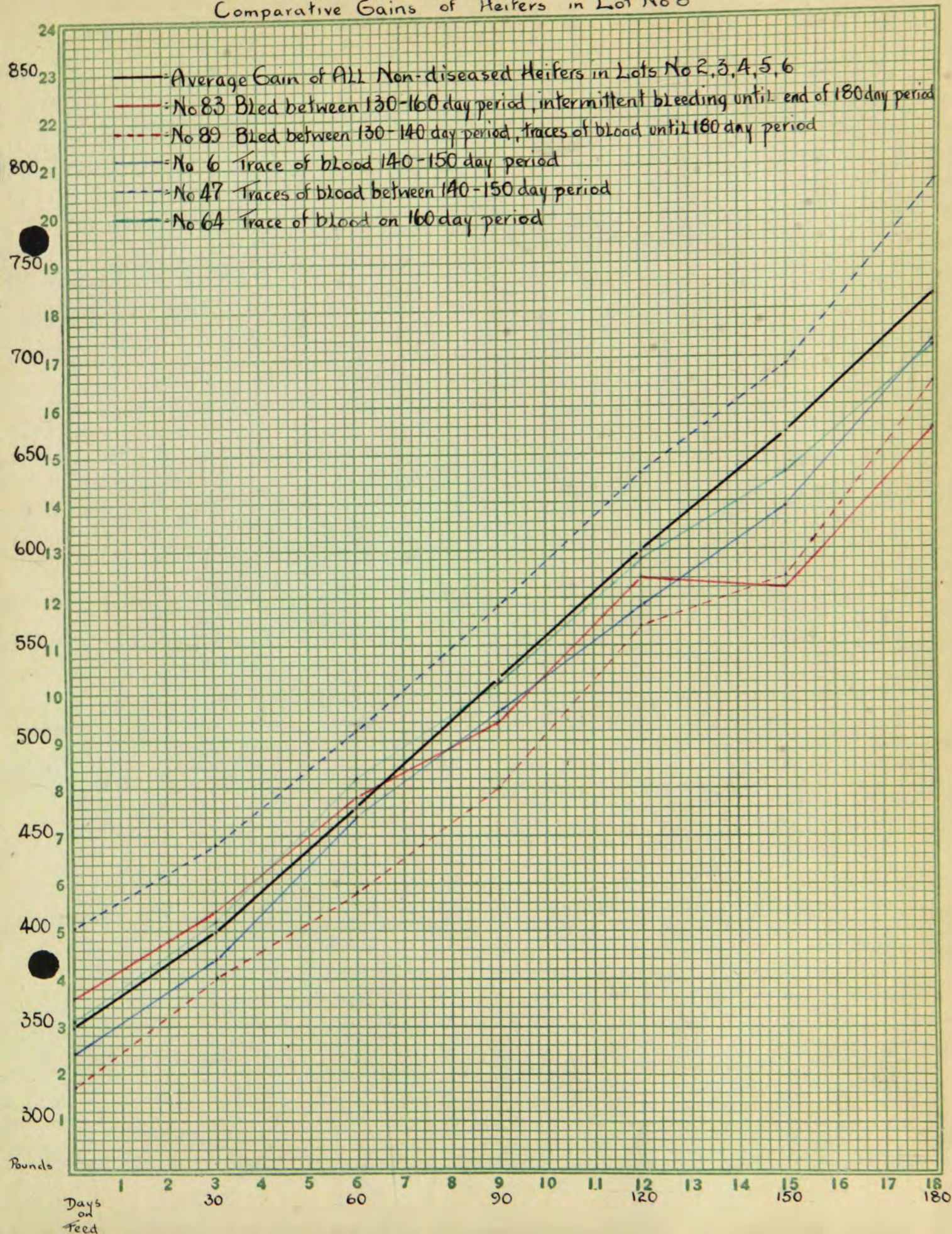


EXPLANATION OF TABLE NO. 14

The rate of gain of all calves except No. 54 compares favorably with the average. The bleeding of No. 33, a blocky, vigorous calf and a good feeder, had no apparent effect on his rate of gain. Considerable blood was discharged by this calf, especially, between the 130 to 140 day period and this was followed by intermittent bleeding during the rest of the feeding test.

No. 54, a non-bleeder, shows a decrease in rate of gain during the 120 to 150 day period for no apparent reason. Weather conditions were normal during this time. This calf did not seem to have a normal appetite, however.

Table No 15 - 57 -
Comparative Gains of Heifers in Lot No 8



EXPLANATION OF TABLE NO. 15

A very similar case to that of heifer No. 35 in Lot No. 1 presents itself in the rate of gain of No. 83. A loss of weight during the heavy bleeding period was followed by normal gains in spite of intermittent bleeding. Apparently heavy bleeding, followed by intermittent discharging of blood prevents abnormal gains and consequently it tends to prevent the regaining of lost weight. However, opposite results were shown in the case of steer No. 33, also in Lot No. 8. No. 33 was a blocky, low set individual of quiet disposition and was a good feeder while No. 83 was built on the shallow-bodied, rangy type, nervous in disposition and only a medium feeder.

No. 89 shows a good example of abnormal gains made after a heavy bleeding period when the bloody discharge was stopped and under control.

No. 64, a rather poor type heifer and a light feeder, shows a general tendency towards subnormal gains although only traces of blood were found during a short period.

SUMMARY DISCUSSION OF TABLES NO. 10, 11, 12, 13, 14, 15

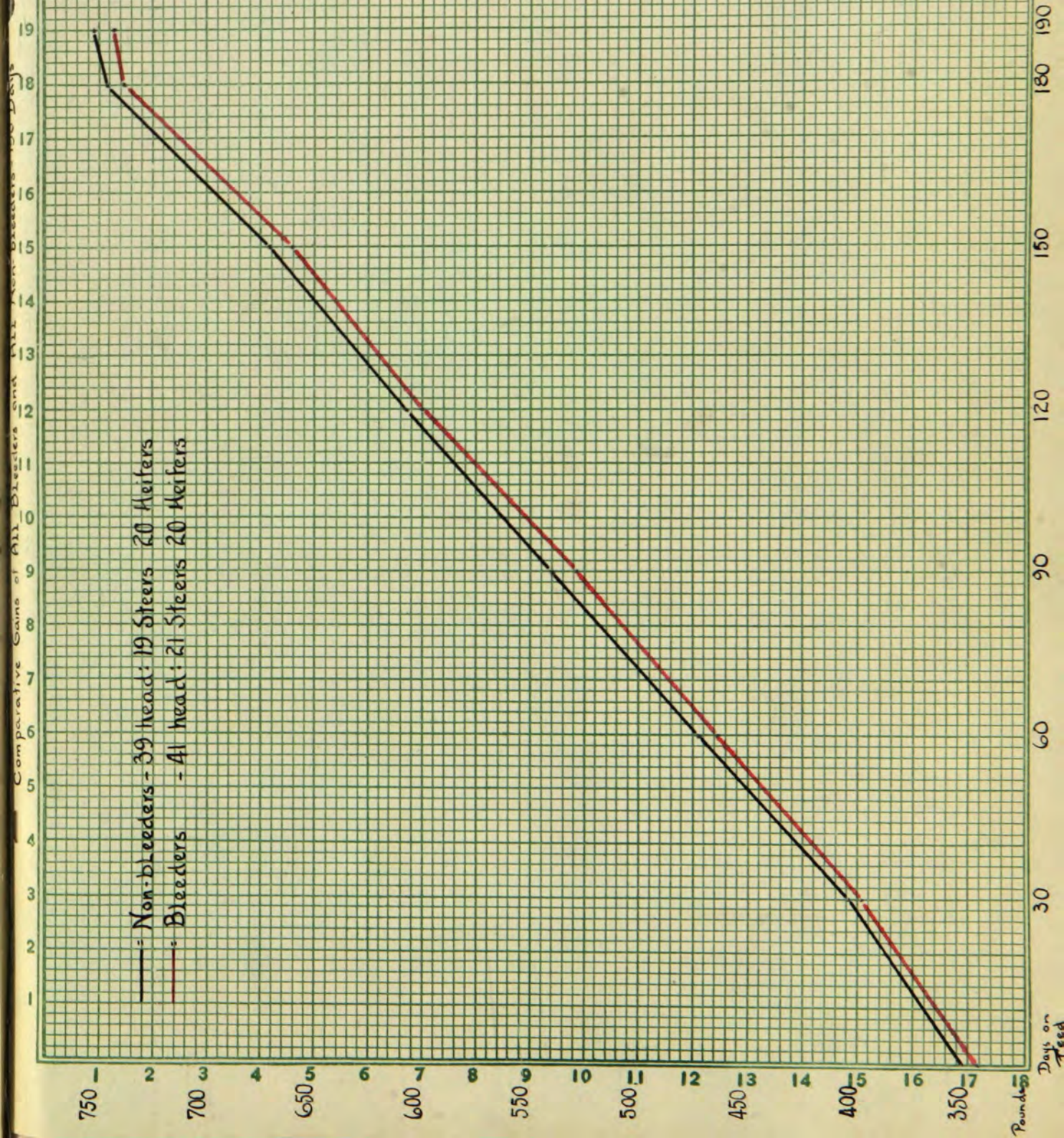
That coccidiosis produces an actual loss in weight during the active period of the disease was found true in all cases where the disease had gained a foothold as indicated by the amount of blood that was thrown off.

This first loss in weight does not seem to be of any great importance provided the bleeding can be stopped in a short period of time because the gains made in the subsequent recuperative period on the same feed allowance have proved to be abnormal and tend to balance the subnormal gains made during the period of bleeding.

In severe cases of coccidiosis where a heavy bleeding period is followed by intermittent bleeding, a permanent loss of weight may be expected from an average individual because subsequent abnormal gains are prevented by the recurrence of blood. An animal which is above the average in conformation, disposition and feeding qualities may make abnormal gains in spite of intermittent bleeding following the active period of the disease. But even in severe cases the effect of coccidiosis on gain over a long period of time where proper treatment is used does not seem to be any greater than the effect of other uncontrollable factors usually included under the term individuality of the animal.

The individuality of an animal seems to be an important factor in determining the effect which coccidial dysentery produces on an animal over an ordinary fattening period.

An individual of good type and feeding qualities seems to overcome the effects of the disease much more readily than an animal lacking in constitution and vigor.



TOTAL GAIN OF BLEEDERS AND NON-BLEEDERS IN
THE SAME LOT -- 190 DAYS

The following tables were prepared to show the relative position of bleeders and non-bleeders in the same lot as far as total gain made is concerned, and, also, to show the difference in range between the highest and lowest gainer of each lot and bring out any effects on gain which might be caused as a result of coccidiosis.

TABLE NO. 16 - TOTAL GAIN OF BLEEDERS AND NON-BLEEDERS
IN LOT NO. 1 - 190 DAYS

Rank in Total Gain Made	Calf No.	Sex	Degree of Bleeding	Initial Weight	Total Gain
1	: 19	: S	: XXXX	: 366.66	: 450.67
2	: 3	: S	:	: 361.66	: 427.67
3	: 28	: H	: XXXX	: 291.66	: 410.34
4	: 27	: H	: XXXX	: 378.33	: 403.67
5	: 32	: H	: XX	: 418.33	: 403.00
6	: 82	: S	: X	: 311.66	: 393.67
7	: 55	: S	: XX	: 378.33	: 370.67
8	: 16	: H	: XX	: 300.00	: 351.00
9	: 35	: H	: XXXXX	: 336.66	: 325.34
10	: 74	: S	:	: 353.33	: 317.34

Average Gain 335.34 pounds.

Key:

- xxxxx - Heavy bleeder for long period.
- xxxx - Heavy bleeder for short period.
- xxx - Moderate bleeder.
- xx - Slight bleeder.
- x - Very slight bleeder.

TABLE NO. 17 - TOTAL GAIN OF BLEEDERS AND NON-BLEEDERS
IN LOT NO. 2 - 190 DAYS

Rank in Total Gain Made	:	Calf No.	:	Sex	:	Degree of Bleeding	:	Initial Weight	:	Total Gain
1	:	59	:	S	:		:	390.0	:	451.67
2	:	45	:	S	:		:	350.0	:	448.67
3	:	80	:	H	:		:	340.0	:	446.0
4	:	73	:	H	:		:	321.66	:	441.67
5	:	72	:	S	:		:	335.0	:	438.67
6	:	34	:	H	:		:	391.66	:	419.67
7	:	12	:	S	:		:	291.66	:	409.01
8	:	86	:	S	:		:	356.66	:	384.01
9	:	5	:	H	:		:	295.0	:	355.67
10	:	1	:	H	:		:	408.33	:	334.34

Average Gain 412.94 pounds.

TABLE NO. 18 - TOTAL GAIN OF BLEEDERS AND NON-BLEEDERS
IN LOT NO. 3 - 190 DAYS

Rank in Total Gain Made	:	Calf No.	:	Sex	:	Degree of Bleeding	:	Initial Weight	:	Total Gain
1	:	11	:	S	:	xx	:	266.66	:	439.01
2	:	91	:	S	:	xxx	:	306.66	:	437.67
3	:	53	:	S	:	xxxxxx	:	396.66	:	430.01
4	:	31	:	F	:	xxx	:	355.0	:	412.33
5	:	25	:	H	:		:	405.0	:	411.67
6	:	36	:	S	:		:	378.33	:	410.
7	:	65	:	S	:	xxxxx	:	355.0	:	386.33
8	:	90	:	H	:	xxx	:	316.66	:	385.01
9	:	17	:	H	:		:	371.66	:	381.67
10	:	40	:	H	:		:	321.66	:	347.01

Average Gain 404.07 pounds.

TABLE NO. 19 - TOTAL GAIN OF BLEEDERS AND NON-BLEEDERS
IN LOT NO. 4 - 190 DAYS

Rank in Total Gain Made	:	Calf No.	:	Sex	:	Degree of Bleeding	:	Initial Weight	:	Total Gain
1	:	41	:	S	:	x	:	403.33	:	482.0
2	:	24	:	S	:	xxx	:	355.0	:	425.67
3	:	20	:	S	:	xxx	:	370.0	:	450.0
4	:	57	:	S	:	x	:	353.33	:	416.67
5	:	76	:	H	:		:	393.33	:	407.0
6	:	88	:	H	:		:	298.33	:	403.0
7	:	52	:	H	:		:	393.33	:	373.34
8	:	66	:	H	:	x	:	358.33	:	365.67
9	:	93	:	S	:	xx	:	283.33	:	364.67
10	:	26	:	H	:	xxx	:	320.0	:	320.67

Average Gain 407.47 pounds.

TABLE NO. 20 - TOTAL GAIN OF BLEEDERS AND NON-BLEEDERS
IN LOT NO. 5 - 190 DAYS

Rank in Total Gain Made	:	Calf No.	:	Sex	:	Degree of Bleeding	:	Initial Weight	:	Total Gain
1	:	30	:	S	:		:	346.66	:	451.67
2	:	84	:	S	:	xx	:	371.66	:	451.67
3	:	18	:	H	:		:	298.33	:	437.67
4	:	78	:	H	:	xx	:	358.33	:	421.67
5	:	9	:	S	:	x	:	323.33	:	407.34
6	:	21	:	S	:	x	:	401.66	:	404.01
7	:	49	:	H	:	xx	:	388.33	:	396.34
8	:	48	:	S	:	xxxxxx	:	283.33	:	328.0
9	:	85	:	H	:		:	330.0	:	300.67

Average Gain 399.89 pounds.

TABLE NO. 21 - TOTAL GAIN OF BLEEDERS AND NON -BLEEDERS
IN LOT NO. 6 - 190 DAYS

Rank in Total Gain Made	:	Calf		:	Degree of Bleeding	:	Initial Weight	:	Total Gain
	:	No.	Sex	:		:		:	
1	:	2	S	:		:	398.33	:	471.67
2	:	46	S	:		:	300.0	:	433.67
3	:	71	S	:		:	401.66	:	425.67
4	:	23	H	:		:	371.66	:	415.67
5	:	75	S	:		:	395.0	:	389.67
6	:	8	H	:		:	318.33	:	389.67
7	:	81	S	:		:	336.66	:	389.34
8	:	39	H	:		:	361.66	:	374.34
9	:	56	H	:		:	281.66	:	342.34
10	:	87	H	:		:	345.0	:	335.67

Average Gain 396.77 pounds.

TABLE NO. 22 - TOTAL GAIN OF BLEEDERS AND NON-BLEEDERS
IN LOT NO. 7 - 190 DAYS

Rank in Total Gain Made	:	Calf No.	:	Sex	:	Degree of Bleeding	:	Initial Weight	:	Total Gain
1	:	10	:	S	:	xxxx	:	306.66	:	441.01
2	:	79	:	H	:	xx	:	370.0	:	417.33
3	:	22	:	S	:		:	405.0	:	416.33
4	:	7	:	S	:	xx	:	365.0	:	413.67
5	:	14	:	S	:	xxx	:	315.0	:	401.67
6	:	42	:	S	:	xx	:	401.66	:	400.67
7	:	94	:	H	:	xxxxx	:	360.0	:	384.33
8	:	50	:	H	:	xx	:	276.66	:	367.34
9	:	77	:	H	:		:	328.33	:	342.67
10	:	13	:	H	:	xx	:	383.33	:	296.0

Average Gain 388.10 pounds.

TABLE NO. 23 - TOTAL GAIN OF BLEEDERS AND NON-BLEEDERS
IN LOT NO. 8 - 190 DAYS

Rank in Total Gain Made	:	Calf No.	:	Sex	:	Degree of Bleeding	:	Initial Weight	:	Total Gain
1	:	70	:	:	:	:	:	403.33	:	496.67
2	:	33	:	S	:	XXXX	:	355.0	:	429.67
3	:	54	:	S	:	:	:	386.66	:	423.34
4	:	37	:	S	:	x	:	271.66	:	402.34
5	:	47	:	H	:	xx	:	401.66	:	389.67
6	:	6	:	H	:	x	:	331.66	:	377.01
7	:	89	:	H	:	XXXX	:	318.33	:	377.0
8	:	64	:	H	:	xx	:	353.33	:	354.0
9	:	83	:	H	:	XXXXXX	:	365.0	:	294.33

Average Gain 393.78 pounds.

TABLE NO. 24 - SUMMARY OF TABLES NO. 16, 17, 18, 19, 20, 21, 22, 23.
TOTAL GAIN OF BLEEDERS AND NON-BLEEDERS IN THE SAME
LOT - 190 DAYS

	:	:	:	:	Average Gain	:	:	:	:
	:	:	:	:	For Each	:	:	:	:
Lot	Above Average Gain				Lot	Below Average Gain			
	Heavy	Medium	Light	Non-		Light	Medium	Heavy	
No.	Bleeders	Bleeders	Bleeders	Bleeders	Non-	Bleeders	Bleeders	Bleeders	Bleeders
1	3	1	1	1	1	1	2	1	1
2									
Non-									
diseased:									
3	1	3		2	2		1	1	1
4		2	2		3	1	2		
5		2	2	2	1		1	1	1
6									
Non-									
diseased:									
7	1	4		1	1		2	1	1
8	1		1	2		1	2	2	2
Total of									
All									
Diseased									
Lots :	6	12	6	8	8	2	10	6	6

EXPLANATION OF TABLE NO. 24

The table indicates that bleeders and non-bleeders are almost equally distributed above and below the average on a total gain per head basis. With the exception of extremely heavy and consistent bleeders such as No. 35 Lot No. 1 and No. 83 Lot No. 8, the disease shows no apparent lasting effects if the animals have sufficient opportunity to recuperate after the disease has been active.

TABLE NO. 25 - RANGE IN GAIN BETWEEN HIGH AND LOW
GAINING ANIMAL IN EACH LOT

Lot No.	:	Range in Gain in Diseased Lots	:	Range in Gain in Non-Diseased Lots
1	:	133.33	:	
2	:		:	117.33
3	:	92.0	:	
4	:	167.33	:	
5	:	151.0	:	
6	:		:	136.0
7	:	145.0	:	
8	:	202.34	:	
Average	:	148.5	:	126.66

EXPLANATION OF TABLE NO. 25

Lot No. 1. even though affected with the disease, shows a range only a little above the average. No. 74, the low gainer, was a non-bleeder and No. 19, the high gainer in this lot, was quite a heavy bleeder over a short period of time. Throughout the whole feeding period the gains of No. 19 are well above the average and the possibility of greater gains, had coccidiosis not entered in, are rather doubtful though possible.

Lot No. 2. This lot was the most uniform lot of calves at the end of the experiment. All the calves were of about the same type and condition without any extremes of either high or low gaining animals. Consequently, a low range in gain was found.

Lot No. 3. Part of the extremely low range in gain can be attributed to the loss in weight of No. 53. He was the highest gainer of Lot No. 3 at the 180 day period. He contracted coccidiosis during the last ten days of the feeding test and lost 17 pounds. He had no recuperative period after the disease was active. The low range was also due to the low gainer of that lot being above average when compared to low gaining calves in other lots.

Lot No. 4. The high spread in gain of this lot is explainable because steer No. 41 was the second highest gaining animal of all steers for the 190 day period and No. 26

the low gaining calf of Lot No. 4 made an average gain taking only the low gaining calf of each lot into consideration.

Lot No. 5. The low gain of No. 85, a narrow, leggy individual, gave a wide range of gain to this lot.

Lot No. 6. Comparative high gains of No. 87, the low animal in the lot, narrowed the spread in gain.

Lot No. 7. The tendency for low gains of calf No. 13 throughout the feeding period caused a very low final weight of the animal and, therefore, a greater spread in gain between the high and low animal of the lot.

Lot No. 8. No. 70, the highest and No. 83 the lowest gainer of all calves were in Lot No. 8, consequently a wider variation in gains was to be expected. The latter table and discussion bring out the spread in gain between the high and low animal of the same lot may be just as variable under normal conditions as in the presence of coccidiosis.

TABLE NO. 26 - RATING OF ALL CALVES IN GAINS FOR 190 DAY PERIOD - AND RELATIONSHIP
TO COCCIDIAL DYSENTERY

Calf Lot Degree of Initial Final		Calf Lot Degree of Initial Final	
Rank: No.:Bleeding :	Wt. : Wt. : Gain :Rank: No.:Bleeding :	Wt. : Wt. : Gain	
1 :70 S: 8 :	: 403.33:900.0 :496.67: 41 :88 H: 4 :	: 298.33:701.33:403.0	
2 :41 S: 4 : x	: 403.33:891.33:488.0 : 42 :37 S: 8 : x	: 271.66:674.0 :402.34	
3 :24 S: 4 : xxx	: 355.0 :840.67:485.67: 43 :14 S: 7 : xxx	: 315.0 :716.67:401.67	
4 : 2 S: 6 :	: 398.33:870.0 :471.67: 44 :42 S: 7 : xx	: 401.66:802.33:400.67	
5 :59 S: 2 :	: 390.0 :841.67:451.67: 45 :49 H: 5 : xx	: 388.33:784.67:396.34	
6 :30 S: 5 :	: 346.66:798.33:451.67: 46 :82 S: 1 : x	: 311.66:705.33:393.67	
7 :84 S: 5 : xx	: 371.66:823.33:451.67: 47 :47 H: 8 : xx	: 401.66:791.33:389.67	
8 :19 S: 1 : xxxx	: 366.66:817.33:450.67: 48 : 75S: 6 :	: 395.0 :784.67:389.67	
9 :20 S: 4 : xxx	: 370.0 :820.0 :450.0 : 49 : 8 H: 6 :	: 318.33:708.0 :389.67	
10 :45 S: 2 :	: 350.0 :798.67:448.67: 50 :81 S: 6 : x	: 336.66:726.0 :389.34	
11 :80 H: 2 :	: 340.0 :786.0 :446.0 : 51 :65 S: 3 : xxxx	: 355.0 :741.33:386.33	
12 :73 H: 2 :	: 321.66:763.33:441.67: 52 :90 H: 3 : xxx	: 316.66:701.67:385.01	
13 :10 S: 7 : xxxx	: 306.66:747.67:441.01: 53 : 94H: 7 : xxxx	: 360.0 :744.33:384.33	
14 :11 S: 3 : xx	: 266.66:705.67:439.01: 54 :86 S: 2 :	: 356.66:740.67:384.01	
15 :72 S: 2 :	: 335.0 :773.67:438.67: 55 :17 H: 3 :	: 371.66:753.33:381.67	

TABLE NO. 26 - CONT'D.

Calf Lot Degree of Initial Final		Calf Lot Degree of Initial Final	
Rank: No.:No.:Bleeding :	Wt. : Wt. : Gain :	Rank: No.:No.:Bleeding :	Wt. : Wt. : Gain :
16 :91 S: 3 : xx	: 306.66:744.33:437.67: 56 :6 H: 8 : x	: 331.66:708.67:377.01	
17 :18 H: 5 :	: 298.33:736.0 :437.67: 57 :89 H: 8 : xxxx	: 318.33:695.33:377.0	
18 :46 S: 6 :	: 300.0 :733.67:433.67: 58 :39 H: 6 :	: 361.66:736.0 :374.34	
19 :53 S: 3 : xxxxx	: 396.66:826.67:430.01: 59 :52 H: 4 :	: 393.33:766.67:373.34	
20 :33 S: 8 : xxxxx	: 355.0 :784.67:429.67: 60 :55 S: 1 : xx	: 378.33:749.0 :370.67	
21 : 3 S: 1 :	: 361.66:789.33:427.67: 61 :50 H: 7 : xx	: 276.66:644.0 :367.34	
22 :71 S: 6 :	: 401.66:827.33:425.67: 62 :66 H: 4 : x	: 358.33:724.0 :365.67	
23 :54 S: 8 :	: 386.66:810.0 :423.34: 63 :93 S: 4 : xx	: 283.33:648.0 :364.67	
24 :78 H: 5 : xx	: 358.33:780.0 :421.67: 64 : 5 H: 2 :	: 295.0 :650.67:355.67	
25 :34 H: 2 :	: 391.66:811.33:419.67: 65 :64 H: 8 : xx	: 353.33:707.33:354.0	
26 :79 H: 7 : xx	: 370.0 :787.33:417.33: 66 :16 H: 1 : xx	: 300.0 :651.0 :351.0	
27 :57 S: 4 : x	: 323.33:740.0 :416.67: 67 :40 H: 3 :	: 321.66:668.67: 347.01	
28 :22 S: 7 :	: 405.0 :821.33:416.33: 68 :77 H: 7 :	: 328.33:671.0 :342.67	
29 :23 H: 6 :	: 371.66:787.33:415.67: 69 :56 H: 6 :	: 281.66:624.0 :342.34	
30 : 7 S: 7 : xx	: 365.0 :778.67:413.67: 70 :87 H: 6 :	: 345.0 :680.67:335.67	
31 :31 H: 3 : xx	: 355.0 :767.33:412.33: 71 : 1 H: 2 :	: 408.33:742.67:334.34	

TABLE NO. 26 - CONT'D.

Calf Lot Degree of Initial Final		Calf Lot Degree of Initial Final	
Rank: No.:	No.:Bleeding : Wt. : Gain	Rank: No.:	No.:Bleeding : Wt. : Gain
32 :25 H: 3 :	: 405.0 :816.67:411.67: 72 :48 S: 5 : xxxxx : 283.33:611.33:328.0		
33 :28 H: 1 : xxxxx	: 291.66:702.0 :410.34: 73 :35 H: 1 : xxxxx : 336.66:662.0 :325.34		
34 :36 S: 3 :	: 378.33:788.33:410.0 : 74 :26 H: 4 : xxx : 320.0 :640.67:320.67		
35 :12 S: 2 :	: 291.66:700.67:409.01: 75 :74 S: 1 : : 353.33:670.67:317.34		
36 : 9 S: 5 : x	: 323.33:730.67:407.34: 76 :85 H: 5 : : 330.0 :630.67:300.67		
37 :76 H: 4 :	: 393.33:800.33:407.0 : 77 :13 H: 7 : xx : 383.33:679.33:296.0		
38 :21 S: 5 : x	: 401.66:805.67:404.01: 78 :83 H: 8 : xxxxx : 365.0 :659.33:294.33		
39 :27 H: 1 : xxxxx	: 378.33:782.0 :403.67: : : : : : : : : : : :		
40 :32 H: 1 : xx	: 418.33:821.33:403.0 : : : 398.59 - Average Total Gain		

SUMMARY OF TABLE NO. 26.

Above Average Gain		Average		Below Average Gain	
Heavy	Medium	Total Gain	Non-	Light	Medium
Bleeders : Bleeders	: Bleeders	: Bleeders	: Bleeders	: Bleeders	: Bleeders
5 : 13	: 5	: 21	: 14	: 4	: 10
					: 6

EXPLANATION OF TABLE NO. 26

This table shows a very uniform distribution of diseased and non-diseased calves. It indicates that the individuality of an animal may greatly influence the effect which coccidial dysentery has on that animal over a long period of time. The seven lowest gaining calves (Table No. 26) with the exception of No. 13 were rather poor in type and only average feeders while No.'s 19, 10, 33, 28, 27 (Table No. 26) exceptionally good individuals and good feeders which bled comparatively as much as the other calves, made a normal rate of gain.

CONCLUSIONS

1. Coccidial dysentery affects the rate of gain of fattening calves.

Factors which tend to lessen the rate of gain or even cause a loss in weight where coccidial dysentery is present are: Time of applying remedial measures, severity of bleeding, and vitality of the animal as indicated generally by type and feeding qualities.

2. If treatment to check the flow of blood is not given immediately after evidence of the disease is shown there seems to be a greater tendency for the reoccurrence of the disease from time to time and the animal may never make what could be considered a normal gain. Immediate treatment of affected calves in the experiment seemed to check the disease successfully and in many instances there was no reoccurrence.

3. Severity of bleeding may or may not cause a lessened rate of gain depending on the time required to stop the loss of blood, but in most instances a heavy loss of blood caused a loss in weight.

4. Animals of good type and feeding qualities and showing evidence of a strong vitality seemed best able to throw off the disease with the least effect on their rate of gain.

5. Except where the disease appeared to become chronic or in exceptional cases, a period of subnormal gain caused

by coccidial dysentery was followed by a recuperative period of abnormal gain which was apparently produced with no more than the normal supply of feed.

6. Although in some cases gains were permanently lessened by coccidial dysentery, examples of equal or greater fluctuations were found in other animals in the experiment not affected by the disease.

7. The spread in gain between the high and low gaining animal of each lot was just as variable under normal conditions as where coccidial dysentery existed.

8. To secure maximum gains where coccidial dysentery is present in commercial feedlots, immediate remedial measures should be taken on discovery of the disease. Individual dosage of animals seems to be the only effective way to handle the trouble.

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