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THE SEARING IRON VS. THE KNIFE FOR DOCKING OR DETAIL- ING LAMBS



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‡In cooperation with School of Agriculture, A. & M. College of Texas.

*In cooperation with the School of Veterinary Medicine, A. & M. College of Texas.

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THE SEARING IRON VS. THE KNIFE FOR DOCKING OR DETAILING LAMBS.

BY

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INTRODUCTION.

Can young lambs be docked or detailed as effectively by means of the hot searing iron or docking pincers as with a sharp knife? This is a subject upon which there is considerable divergence of opinion among many prominent range sheepmen, as well as among a considerable number of small flock owners. Much has been written upon this subject in a general way, while but few tests have been carried to a satisfactory termination in this country. In Australia* several docking tests, in which a comparison has been made between the effectiveness of the hot iron and the knife for detailing lambs, have been reported. In practically all instances, the tails docked with the sharp knife healed sooner than those docked with the hot iron.

All of the most progressive and successful flock owners follow an unflinching practice of "marking" their lambs. "Marking" comprises the docking and ear-marking of the entire lamb flock, including the castration of the male lambs, at ages ranging from ten days to six weeks. Preferably the "marking" should be done when the lambs are about two weeks old, since these operations seem to be less severe at that age. On the ranges where the sheep interests are extensive, it is quite impossible to "mark" the entire lamb flock at as young an age as might be desired. These operations are usually performed once or twice during the dropping season, which generally covers a period extending through five or six weeks.

OBJECTS OF EXPERIMENT.

In 1916 a docking project was outlined, and active investigation was started at Substation No. 7, in Dickens County. The objects of this test were for the purpose of determining:

1. Whether the hot searing iron or the docking pincers can be used more effectively in docking or detailing lambs than the sharp knife.
2. Whether the castration of male lambs at the time of docking would show any tendency to stunt or retard their normal development.

PLAN.

On account of the small number of lambs available at Substation No. 7, it was necessary to continue this project through several consecutive seasons. The lambs used in this test were sired by Lincoln, Romney,

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*Farmers' Bulletin No. 67, 1913, "The Searing Iron vs. the Knife for Detailing Lambs," Department of Agriculture, New South Wales.

Rambouillet, Shropshire, and Southdown rams; and were out of high grade Rambouillet ewes. Previously to "marking," the lambs were divided equally, in so far as was practicable, with special regard to breeding, age, sex, and weight. On account of the small number of lambs available, it was not, in all instances, possible to divide the several lots equally with special reference to sex. All lambs which were weak and unthrifty were excluded from the test.

The lambs were docked at ages ranging from one to three weeks. With the exception of the 1919 test, the docking was done when the lambs averaged about eight to ten days of age.

METHODS OF DOCKING.

1. *Searing.*—During the 1916 and 1917 tests the docking chisel, similar to that known among ranchmen as the Ellenwood iron, was used. This iron was heated to a cherry red and the docking operation conducted in accordance with the most progressive ideas upon this subject. The docking pincers replaced the docking chisel during the tests conducted in 1918 and 1919.

2. *Sharp Knife.*—The sharp knife was used on a representative group of lambs during each of the four seasons in which this test was conducted. A sharp, clean blade was used in all the docking operations. No cords or strings were used to stop excessive bleeding throughout this test.

3. *Cut with Knife, Artery Seared.*—In order to obtain more complete results, it was decided to dock a representative number of lambs during the 1916 and 1917 tests, with a knife, this operation being followed immediately with the searing of the artery by means of a small pointed instrument heated to a cherry red.

TREATMENT OF WOUNDS.

Only in a few isolated cases, after the docks or wounds had become infested with screw worms, was it necessary to treat any of the wounds.

RECORDS.

All lambs in this test were divided into separate groups before docking. Each lamb was carefully weighed immediately preceding the "marking." The lambs were reweighed on the second and seventh days after docking, and thereafter at regular weekly intervals, until all the docks had completely healed. A full set of notes covering the condition of the sores or wounds were kept, each lamb receiving the attention of the attendant who made a careful record of the actual condition of the docks at the regular weighing periods.

The test herein reported was continued through four seasons. Eighty-four lambs were docked with the hot iron; eighty-four were docked with the knife, and thirty-two were docked with the knife—the artery afterwards being seared. The number of lambs comprising this test totaled two hundred.

At the beginning of the test it was planned to continue weight records on the lambs through a period of from five to six months. Due to the fact, however, that a severe drouth continued through

1916, 1917, and 1918, the lambs showed a tendency to lose weight rather than to gain during the months of August and September of these respective years. It became necessary, therefore, to discontinue weight records at a much earlier date than had been previously anticipated.

In Tables 1, 2, 3, 4, and 5, respectively, are shown weights and gains made by the lambs during the periods that observations were being made.

Table 1.—Gains Made by Lambs Docked in 1916.

	Method of Docking					
	Hot Iron		Knife		Knife— Artery Seared	
	16	9	15	9	16	5
Number lambs in test.....						
Weighing Dates	Ewes (lbs.)	Wethers (lbs.)	Ewes (lbs.)	Wethers (lbs.)	Ewes (lbs.)	Wethers (lbs.)
April 17, average weight.....	11.375	12.227	10.46	10.66	12.00	10.80
April 19, average weight.....	11.844	12.610	10.96	11.11	11.95	11.05
April 24, average weight.....	14.300	14.920	13.12	13.07	15.43	14.50
May 1, average weight.....	16.800	17.880	15.19	14.30
May 8, average weight.....	18.470	19.650	16.86	17.12	19.23	18.21
May 15, average weight.....	21.870	23.520	20.00	20.89	22.84	21.94
July 8, average weight.....	37.130	40.110	34.50	36.83	37.13	36.60
Aug. 5, average weight.....	42.250	45.830	38.92	44.44	43.13	40.40
Average gain per lamb.....	30.880	33.600	28.46	33.78	31.14	29.50
Average daily gain (110 day test)...	0.281	0.305	0.258	0.307	0.283	0.269

Table 2.—Gains Made by Lambs Docked in 1917.

	Method of Docking					
	Hot Iron		Knife		Knife— Artery Seared	
	4	8	6	6	6	5
Number of lambs in test.....						
Weighing Dates	Ewes (lbs.)	Wethers (lbs.)	Ewes (lbs.)	Wethers (lbs.)	Ewes (lbs.)	Wethers (lbs.)
April 18, average weight.....	13.09	13.50	11.72	13.24	11.33	13.15
April 20, average weight.....	13.91	13.96	12.35	13.42	11.88	13.57
April 25, average weight.....	16.44	16.12	14.20	15.98	13.66	15.58
May 2, average weight.....	17.66	19.13	16.68	18.10	16.24	18.02
May 9, average weight.....	22.38	22.67	19.46	21.19	18.62	21.52
July 9, average weight.....	43.83	46.68	45.33	48.33	39.70	41.70
Average gain per lamb.....	30.74	33.18	33.61	35.09	28.37	28.55
Average daily gain (82 day test).....	0.375	0.404	0.410	0.428	0.346	0.348

Table 3.—Gains Made by Lambs Docked in 1918—Test A.

	Method of Docking			
	Hot Iron		Knife	
	9	9	6	12
Number of lambs in test.....				
Weighing Dates	Ewes (lbs.)	Wethers (lbs.)	Ewes (lbs.)	Wethers (lbs.)
April 9, average weight.....	11.30	13.45	13.21	11.29
April 11, average weight.....	11.80	13.75	13.50	11.68
April 16, average weight.....	13.82	16.48	15.36	14.27
April 23, average weight.....	16.63	19.15	18.08	17.66
April 30, average weight.....	19.15	21.16	18.41	19.12
May 7, average weight.....	20.21	23.86	20.85	21.47
July 1, average weight.....	37.18	42.35	37.51	39.57
Average gain per lamb.....	25.88	28.90	24.30	28.28
Average daily gain (83 day test).....	0.312	0.348	0.293	0.341

Table 4.—Gains Made by Lambs Docked in 1918—Test B.

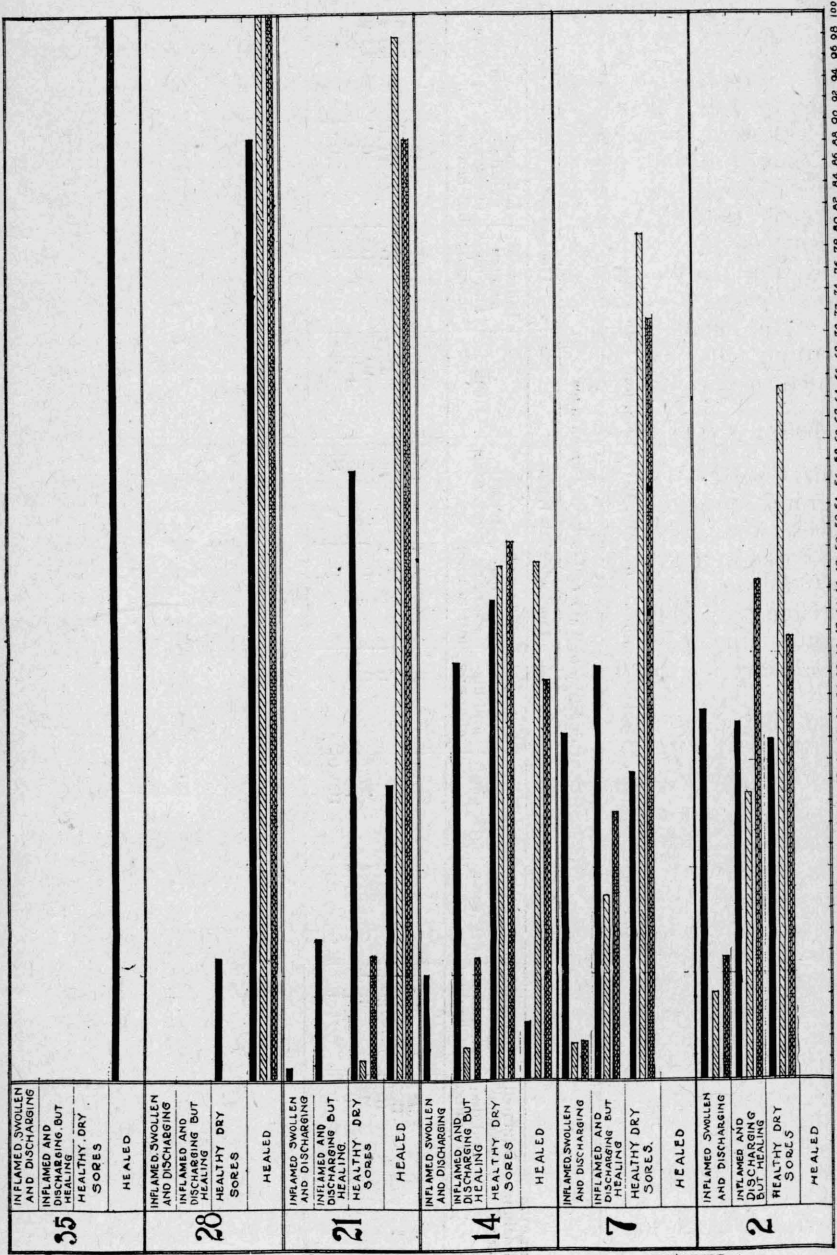
Number of lambs in test.....	Method of Docking.			
	Hot Iron		Knife	
	7	5	6	7
Weighing Dates				
April 23, average weight.....	Ewes (lbs.) 12.67	Wethers (lbs.) 13.70	Ewes (lbs.) 11.65	Wethers (lbs.) 12.14
April 25, average weight.....	13.20	14.16	13.27	12.75
April 30, average weight.....	13.08	14.46	13.56	13.34
May 7, average weight.....	15.48	16.54	14.95	15.25
May 14, average weight.....	18.86	18.44	17.58	17.37
May 21, average weight.....	21.65	20.84	20.72	19.71
July 1, average weight.....	33.73	35.72	34.20	32.06
Average gain per lamb.....	21.06	22.02	22.55	19.92
Average daily gain (69 day test).....	0.305	0.319	0.327	0.288

Table 5.—Gains Made by Lambs Docked in 1919.

Number of lambs in test.....	Method of Docking			
	Hot Iron		Knife	
	9	8	9	8
Weighing Dates				
May 1, average weight.....	Ewes (lbs.) 18.08	Wethers (lbs.) 19.40	Ewes (lbs.) 17.50	Wethers (lbs.) 19.25
May 3, average weight.....	18.84	19.90	18.51	20.01
May 8, average weight.....	21.62	21.61	23.00	22.71
May 15, average weight.....	25.08	25.18	26.02	26.82
May 22, average weight.....	29.46	28.83	30.02	31.16
May 29, average weight.....	34.57	33.01	34.82	36.81
June 5, average weight.....	39.63	37.43	38.07	42.26
July 1, average weight.....	53.90	50.66	55.10	59.10
Average gain per lamb.....	35.82	31.26	37.60	39.85
Average daily gain (61 day test).....	0.59	0.51	0.62	0.65

A summary of the four years' tests is shown in Table 6. Close examination of the docks after detailing the lambs revealed the fact that there were three outstanding conditions prevalent the second day after docking. These conditions might properly be designated as follows:

1. Docks inflamed, swollen, and discharging.
2. Docks inflamed and discharging, but healing.
3. Healthy dry sores.



0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 74 76 78 80 82 84 86 88 90 92 94 96 98 100
 PERCENTAGE
 DAYS
 DOCKED WITH HOT IRONS
 DOCKED WITH SHARP KNIFE
 DOCKED WITH KNIFE SEALED
 CONDITION OF TAILS OR DOCKS IN PERCENTAGES

The condition of the tails or docks at the several intervals after the docking operation is shown in percentages in Table 6.

FIRST EXAMINATION OF DOCK TWO DAYS AFTER DOCKING.

Tails Seared.—The docks of 34.5 per cent. of the lambs comprising this group were inflamed, swollen, and discharging; 33.5 per cent. of the docks were discharging, but were not swollen; 32 per cent. of the docks showed all indications of being dry, healthy sores.

Tails Removed with Knife.—The docks of 8.2 per cent. of the lambs comprising this group were inflamed, swollen, and discharging; 26.8 per cent. of the docks were discharging, but showed indications of healing, while around 65 per cent. of the docks were dry, healthy sores.

Tails Removed with Knife—Artery Seared.—The docks of 11.7 per cent. of the lambs comprising this group were inflamed, swollen, and discharging; 46.8 per cent. of the docks were discharging, but healing, while 41.5 per cent. of the docks were dry, healthy sores.

SECOND EXAMINATION OF DOCKS SEVEN DAYS AFTER DOCKING.

Tails Seared.—The docks of 32.2 per cent. of the lambs comprising this group were inflamed, swollen, and discharging; 38.8 per cent. of the docks were inflamed and discharging but healing, and 29 per cent. of the docks were dry, healthy sores.

Tails Removed with Knife.—The docks of 3.2 per cent. of the lambs comprising this group were inflamed, swollen, and discharging; 17.5 per cent. of the docks were inflamed and discharging, but healing, while 79.3 per cent. of the docks were dry, healthy sores.

Tails Removed with Knife—Artery Seared.—The docks of 3.3 per cent. of the lambs comprising this group were inflamed, swollen, and discharging; 25.2 per cent. of the docks were inflamed and discharging, but healing, while 71.5 per cent. of the docks were dry, healthy sores.

THIRD EXAMINATION OF DOCKS FOURTEEN DAYS AFTER DOCKING.

Tails Seared.—The docks of 10 per cent. of the lambs comprising this group were inflamed, swollen, and discharging; 39.3 per cent. of the docks were inflamed and discharging, but healing; 45.2 per cent. were dry, healthy sores, while 5.5 per cent. of the docks had healed.

Tails Removed with Knife.—The docks of 3.2 per cent. of the lambs comprising this group were inflamed and discharging, but healing; 48.4 per cent. of the docks were healthy, dry sores, while 48.4 per cent. of the docks had entirely healed.

Tails Removed with Knife—Artery Seared.—The docks of 11.8 per cent. of the lambs comprising this group were inflamed and discharging, but healing; 50.4 per cent. of the docks were dry, healthy sores, while 37.8 per cent. of the docks had entirely healed.

FOURTH EXAMINATION OF DOCKS TWENTY-ONE DAYS AFTER DOCKING.

Tails Seared.—The docks of 1.2 per cent. of the lambs comprising this group were inflamed, swollen, and discharging; 13.6 per cent. of the docks were inflamed and discharging, but healing; 57.4 per cent. of the

docks showed dry, healthy sores, while 27.8 per cent. of the docks had entirely healed.

Tails Removed with Knife.—The docks of 2 per cent. of the lambs comprising this group showed dry, healthy sores, while 98 per cent. of the docks had healed.

Tails Removed with Knife—Artery Seared.—The docks of 11.9 per cent. of the lambs comprising this group showed dry, healthy sores, while 88.1 per cent. of the docks had healed.

FIFTH EXAMINATION OF DOCKS TWENTY-EIGHT DAYS AFTER DOCKING.

Tails Seared.—The docks of 11.6 per cent. of the lambs comprising this group showed dry, healthy sores, while 88.4 per cent. of the docks had healed.

Tails Removed with Knife.—The docks of all lambs comprising this group had entirely healed previously to the end of the twenty-eight-day period.

Tails Removed with Knife—Artery Seared.—The docks of all lambs comprising this group had entirely healed previously to the end of the twenty-eight-day period.

SIXTH EXAMINATION OF DOCKS THIRTY-FIVE DAYS AFTER DOCKING.

Tails Seared.—The docks of all lambs comprising this group had entirely healed, thirty-five days after docking.

THE HEALING OF THE DOCK.

This investigation revealed that the sores resulting from docking lambs with the hot iron were, in most instances, much uglier than when docked with the clean, sharp knife. A large percentage of the docks of the lambs that were docked with the hot iron became severely inflamed and swollen within a few days after the docking operation, and continued to discharge for a number of days thereafter. The greater percentage of the lambs docked with the knife presented healthy sores, and it seemed that healing began almost immediately after the operation. It is very probable that in some instances the bone was not seared at the joint, in which event the tendency would be to create an uglier wound. It is a more difficult task to sever the tail at the joint when the hot iron is used than when this operation is performed with the knife.

DEATHS RESULTING FROM DOCKING.

In the test herein reported two cases resulted fatally. In 1917 one of the strongest and most thrifty lambs docked with the hot iron became paralyzed in the rear quarters. The first symptom manifested was the severe swelling of the dock. Ten days after the operation the swelling had extended well forward from the dock to the middle portion of the back, and the lamb was in an utterly helpless condition. When given assistance, it took nourishment readily and received a sufficient amount of milk daily to provide for the proper body maintenance. For a number of days the back was massaged and the dock was washed with the various disinfectants. Various treatments were administered for about a week's time without avail, the lamb being finally

killed. No blood tests were made, hence the actual cause of this condition was not ascertained.

In 1919 a strong, thrifty lamb weighing 20.9 pounds died within a few hours after having been docked with the sharp knife. The attendant observed the lamb closely for several hours after docking and reported that death must have resulted from the shock received at the time of docking, since he was certain that very little blood was lost in this particular case.

DEVELOPMENT OF THE LAMBS.

In Table 7 are shown the average gains made by the two hundred head of female and wether lambs which were under observation during this experiment. The average period through which weight records were kept extended over eighty-one days. This table shows the comparative gains made by the lambs docked by the different methods.

Table 7.—Average Gains Made by Female and Wether Lambs.

	Method of Docking					
	Hot Iron		Knife		Knife Artery Seared*	
	45 Ewes	39 Wethers	45 Ewes	39 Wethers	22 Ewes	10 Wethers
Number of lambs docked.....	45	39	45	39	22	10
Sex.....	Ewes	Wethers	Ewes	Wethers	Ewes	Wethers
Average gain per lamb, 81 days....	29.30	30.50	29.35	31.46	30.40	29.02
Average daily gain, lbs.....	0.361	0.376	0.362	0.388	0.316	0.302

*Calculation based on 93 day period for lambs docked with knife—artery seared.

The average gain during the eighty-one-day period made by all lambs docked with the hot iron was 29.85 pounds, while the gain made by the lambs docked with the sharp knife averaged 30.32 pounds. It is thus shown that throughout this test the lambs docked with the sharp knife made a slightly larger gain than those docked with the hot iron.

THE EFFECTS OF CASTRATION ON DEVELOPMENT OF THE WETHER LAMBS.

The operations of castrating and docking were performed in a clean pen, as nearly free from dust and dirt as was possible to select. The lambs were in all instances allowed to settle down before performing these operations, in order to obviate an overheated and excited condition which would have more than likely resulted with severe bleeding and possibly some fatalities.

By referring to Table 7, it will be observed that the wether lambs docked with the hot iron and with the knife made greater gains than did the ewe lambs. By taking a separate average of the gains made by the wether lambs and the ewe lambs docked with the hot iron and the knife, it was found that the average daily gain made by the wethers during the eighty-one-day period was 30.98 pounds, while that made by the ewe lambs during the same period averaged 29.32 pounds; thus a difference of 1.66 pounds gain in favor of the wether lambs is shown. In tests† conducted in Australia it was revealed that

†Farmers Bulletin No. 67, 1913, Department of Agriculture, New South Wales, page 24.

the wether lambs which were castrated at the time of docking showed an increased gain of four to five pounds during a given period over the ewe lambs which were docked at the same time.

SUMMARY OF THE DOCKING TEST.

1. The results obtained in docking two hundred lambs indicated that there is no advantage to be gained in docking young lambs with the hot iron or docking pincers. This operation can be performed more quickly with the knife, and apparently with no great danger of fatalities due to excessive bleeding.
2. The lambs docked with the sharp knife healed one week sooner than those docked with the hot iron.
3. In practically every instance the knife left a healthier, cleaner wound or sore than did the hot iron.
4. Less suffering was incurred when lambs were docked with the sharp knife.
5. The lambs docked with the knife made a slightly larger gain throughout the test than did those docked with the hot iron.
6. No advantage was gained by searing the artery after docking with the knife.
7. The castration of male lambs at the time of docking revealed that this operation does not hinder development, since the wether lambs showed a greater gain than did the ewe lambs.