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T. Donald Bell

Milton A. Madsen

James A. Bennett

Louis L. Madsen

D. Clarence Schmultz

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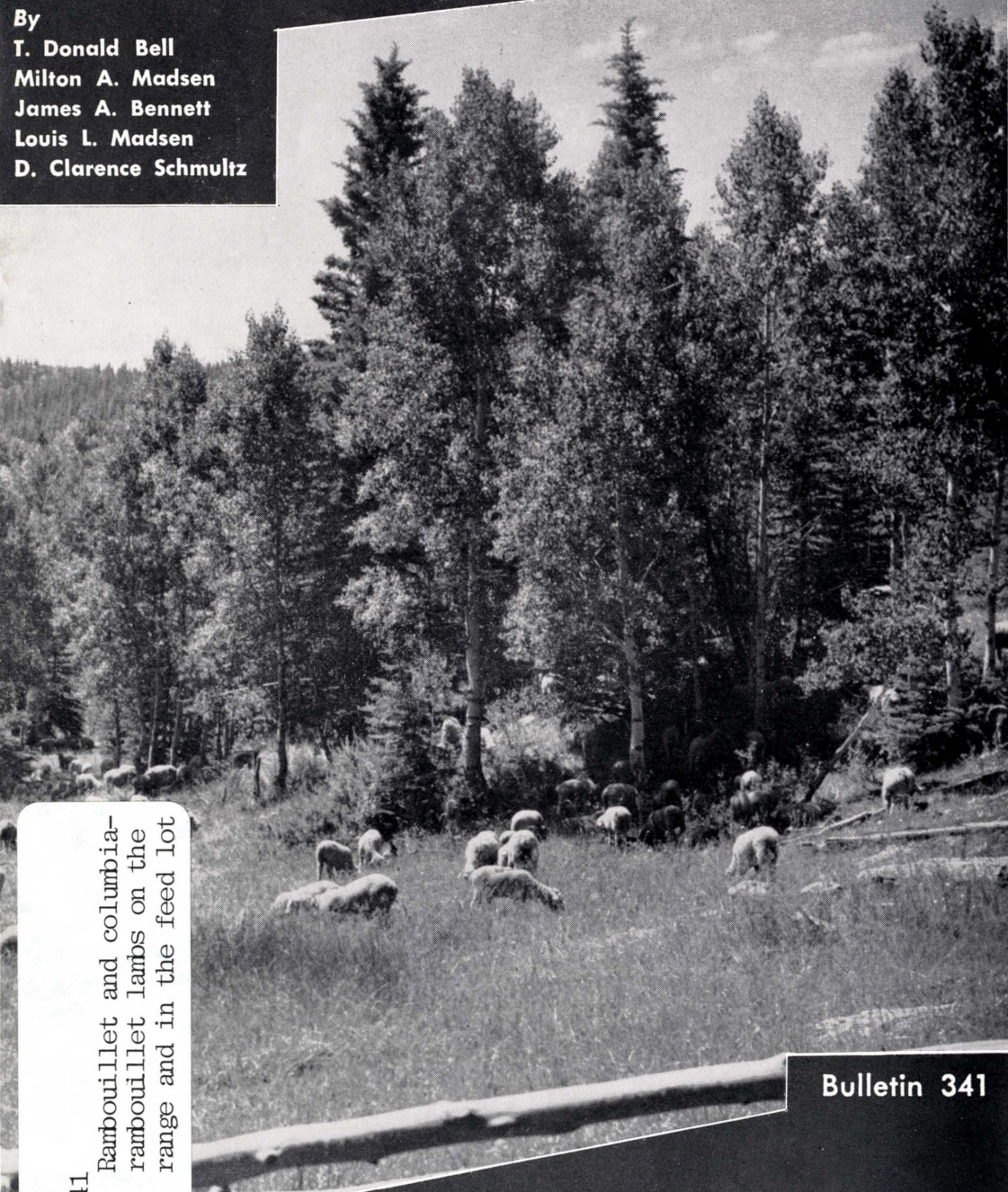
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T. Donald Bell
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AGRICULTURAL EXPERIMENT STATION

Utah State Agricultural College

Logan, Utah

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Bulletin 341

AGRICULTURAL EXPERIMENT STATION
UTAH STATE AGRICULTURAL COLLEGE
LOGAN, UTAH

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Rambouillet and Columbia-Rambouillet Lambs on the Range and in the Feed Lot

T. DONALD BELL, MILTON A. MADSEN,
JAMES A. BENNETT, LOUIS L. MADSEN,
and D CLARENCE SCHMUTZ²

Introduction

SHEEP of predominately Rambouillet breeding have been most popular on southern Utah ranges because of their hardiness and wool-producing ability. In the early years of sheep production in Utah a major portion of the income was derived from the sale of wool. This situation has gradually changed over the past years and now income from the sale of lambs is greater than that from fleeces. Rambouillet rams with improved mutton qualities have been used by some range operators to increase the mutton producing abilities of their ewes. Other operators have used Corriedale, Panama, Columbia, and other white faced crossbred-type rams to achieve more speedily the desired mutton qualities.

Because of the interest of Utah sheepmen in the problem of improving their range ewes, the Utah Agricultural Experiment Station, in cooperation with the Branch Agricultural College at Cedar City, established a range sheep unit at Cedar City in 1943 and 1944. This unit has been used to conduct controlled breeding studies aimed at the determination of the type or breed of sheep most desirable for southern Utah range conditions. This bulletin reviews the initial results and gives attention particularly to the qualities of the lambs produced by mating Columbia rams to grade Rambouillet range ewes compared to those produced by mating Rambouillet rams to ewes similar to those bred to the Columbias.

Review of Literature

RAMBOUILLET, Corriedale, and Columbia sheep have been studied under range conditions since 1918 by the United States Department of Agriculture at their Sheep Experiment Station at Dubois,

¹Report on project 254—State.

²Professor, assistant professors, former head of the Animal Husbandry Department, Utah Agricultural Experiment Station, and assistant professor of agricultural economics, B.A.C., respectively. Dr. Bell was stationed at the B.A.C. He is now a member of the staff of Kansas State College. Dr. L. L. Madsen is now president of the Utah State Agricultural College.

Idaho. Cooper and Stoehr (3)³ reported that over a period of eight years Columbia lambs were 5.4 pounds heavier than Rambouillet lambs at weaning. Production of lamb per ewe was greater by 8.3 pounds for the Columbia ewes. The Corriedale ewe production was nearly equal to that of the Columbia ewes, but the weaning weight of the Corriedale lambs was slightly less than that of the Rambouillet lambs.

Neale (7) found in tests conducted under range conditions in northern New Mexico that Rambouillet-bred lambs were heavier at weaning time than Corriedale-Rambouillet or Romney-Rambouillet crossbred lambs.

Studies made by Hultz, Gorman, and Wheeler (6) in Wyoming using Rambouillet, Corriedale, and Lincoln rams on range ewes found that weaning weights of Lincoln crosses were the largest and Corriedales the lowest. Carcass grades of the Corriedale crosses, however, were superior to those of the two other crosses. Gorman et al. (4) reported tests of crosses between grade Rambouillet ewes and Columbia, Corriedale, Lincoln, and Romney rams. At 140 days of age the Columbia crosses were heaviest followed by Lincolns, Romneys, and Corriedales. Slaughter grades were similar for the Corriedale, Columbia, and Romney crosses. Carcass grades of the Lincoln cross were slightly lower. Only small differences in proportion of cuts were found between the groups of crossbred lambs.

Whitehurst, et al. (11) reported that native Florida ewes produced somewhat more lambs than Columbias, but that Columbia and native ewes did not differ materially in weight of their lambs at weaning. The origin of the native ewes was unknown. They were white faced and small in size averaging about 30 to 40 pounds less than the Columbia ewes at maturity. The tests were conducted under Florida farm conditions.

Bell and Neale (8) and Bell (1) found in feed lot tests with crossbred lambs in New Mexico that the average daily gains of smooth Rambouillet lambs were nearly equal to those of Hampshire-Rambouillet lambs and greater than the gains of lambs from Romney-Rambouillet and Corriedale-Rambouillet crosses. Carcass grades of the smooth Rambouillet lambs were generally superior to the other crosses with the exception of the Hampshire cross.

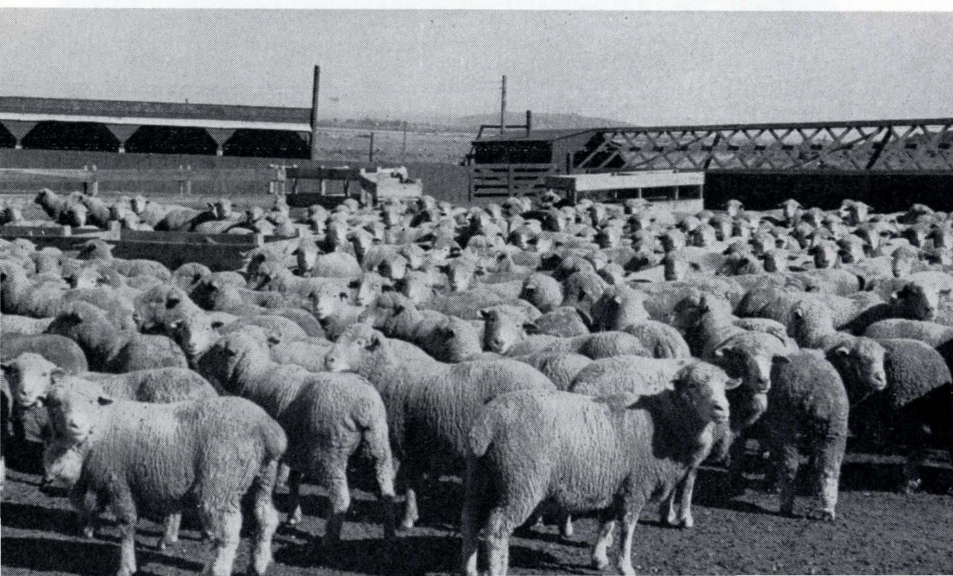
³Numbers in parentheses are to literature cited page 20.

Materials and Methods

DURING 1943 and 1944 land and facilities for the operation of a range sheep herd were procured. Nine hundred yearling ewes of predominately Rambouillet breeding were purchased in the spring of 1944 from three range flocks in southern Utah. Some selection for open faces and smooth bodies was made at the time of purchase. These ewes at 4 years of age are shown in fig. 1.

The ewes were randomly divided into two groups during the fall of 1944. One group was bred to Columbia rams and the other to Rambouillet rams. The ewes bred to Columbia rams in 1944 were bred to Rambouillet rams in 1945, and those ewes bred to Rambouillet rams in 1944 were bred to Columbia rams in 1945. This system of breeding was repeated with the ewes remaining in the herd in 1946, 1947, and 1948. Culling was at an earlier age than commonly practiced in most range herds, so that information could be obtained from the ewes produced in the crossing program. The Rambouillet rams used were obtained from the flocks of the Branch Agricultural College at Cedar City; the Utah State Agricultural College at Logan; the United States Regional Sheep Breeding Laboratory at Dubois, Idaho; and from flocks of private breeders in Utah. A typical Rambouillet ram used in the experimental breeding program is shown in fig. 2. Columbia rams were obtained from the Dubois Station, the flock at the Utah State Agricultural College, and from flocks of private

Fig. 1. Grade Rambouillet ewes used in the experimental breeding studies



breeders in Utah. One of the Columbia rams used in the tests is shown in fig. 3. Typical lambs resulting from the use of these two breeds of rams on range ewes may be seen in fig. 4 and 5.

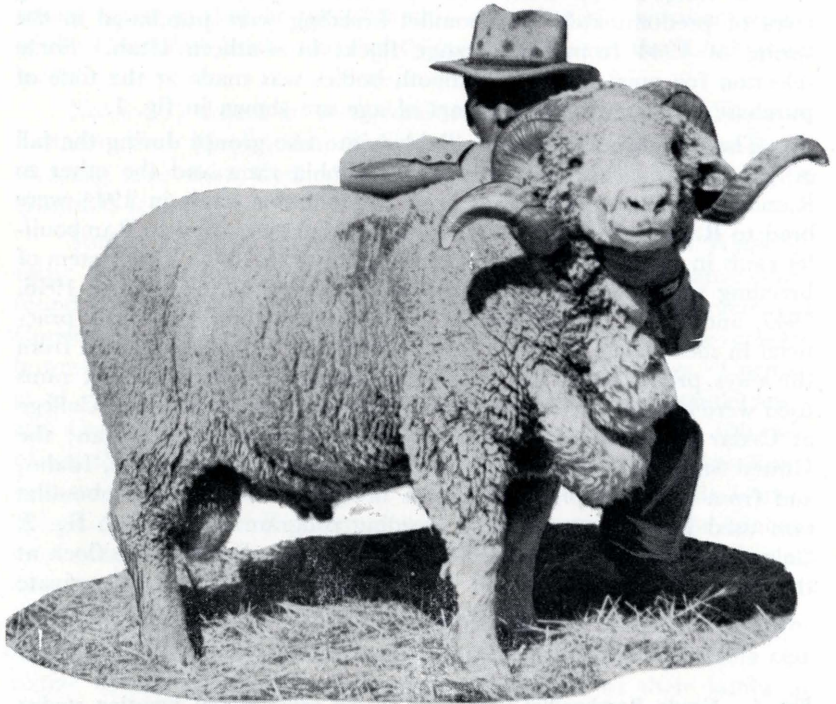


Fig. 2. Typical Rambouillet ram used in the breeding studies

At the time of initiation of the studies at Cedar City only an estimated 8 to 10 percent of the sheep operators in the area utilized farm lands for spring and fall grazing, depending upon desert and mountain ranges almost entirely for the maintenance of their herds. One of the objectives of the study at Cedar City was to determine the desirability of utilizing farm pastures and harvested feeds, particularly during the breeding and lambing periods. Careful records of costs were kept and a bulletin reviewing the economic phases of the study will be presented. There was an increase in the use of farm lands by the other sheep operators in the area during the five years of the study and a careful check of the flocks in the spring of 1950 revealed that 35 percent of the herds were using farm lands and harvested feeds during their lambing operation. Many of the other

operators were feeding supplemental feed on the range and were developing and improving their spring and fall ranges by seeding them to crested wheatgrass or rye.



Fig. 3. Typical Columbia ram used in the breeding studies

The ewes in the study reported here were bred on the winter range in 1944 during the period of November 15 to December 15. In 1945, 1946, 1947, and 1948 the ewes were bred during November in alfalfa and perennial grass pastures on the experimental farm near Cedar City. The herd was moved to the winter range about the first of December. This range is located about fifty miles west of

Cedar City, and is typical of the pinon-juniper and sagebrush range regions of the West. The ewes remained on the winter range until approximately March 1. A supplement of one-fifth pound of 43 percent cottonseed cake per head daily was given during the last 40 days on the range. Exceptionally deep snows during the winter of 1948-49 required the feeding of both hay and concentrates during most of the winter.

The ewes were brought back to the experimental farm early in March where they were fed alfalfa hay and concentrates until lambing was completed. The sheep were shorn during the latter part of March just preceding lambing. Fleece weight, staple length, and fineness grades were recorded for each ewe and ram. Side and composite samples were taken for estimations of shrinkage.

The ewes were lambbed in sheds. The lambs were ear tagged at birth and their ancestry recorded. With the exception of the lambs born in 1945, all lambs were weighed shortly after they were dropped. Alfalfa, perennial grass, and fall-planted grains were utilized by the ewes and lambs as soon as the forage had sufficient development in the spring. The sheep were taken to the summer range during the early part of June. This range, owned by the Branch Agricultural College and the Utah Agricultural Experiment Station, is located just 12 miles east of Cedar City and is typical of much of the mountain range of the West. The cover shows a portion of the experimental herd grazing on the summer range.

In the first four years of the study the lambs were weaned during the middle of September. In 1949 they were weaned during the latter part of August. The lambs were weighed individually. All of the lambs were also scored for various body and fleece characteristics at weaning. Two or three individuals working independently rated each lamb for the amount of wool covering on the face, the number of wrinkles on the body, for desirable body type, and for condition or fleshing. Length of wool on the side was also measured by two individuals. The final score of each lamb for the various characteristics was determined by averaging the independent observations of the scorers.

Fig. 4. Columbia-Rambouillet crossbred ewe lambs





Fig. 5. Rambouillet sired ewe lambs out of grade Rambouillet ewes

The scoring system used was that developed by the Dubois Station. The possible scores ranged from 1 to 5, with 1 being the most desirable and 5 the least desirable. A score of 1 was given an entirely open faced lamb and one completely covered with wool was given a score of 5. A completely smooth lamb was graded 1 on body wrinkles, and a lamb with wrinkles over all the body was graded 5. A grade of 1 indicated the most desirable body conformation and the higher scores less desirable. Condition or amount of finish was determined by handling and the lower scores indicated the fatter lambs. At weaning the lambs were also graded by a commercial buyer into fat and feeder grades. The fat wether lambs were shipped and slaughtered in Los Angeles. All or a portion of the remaining wether lambs have been finished on pasture or in the feed lot on the experimental farm at Cedar City. Groups of wether lambs were also sent to the Utah State Agricultural College at Logan for feed lot trials in 1946, 1947, 1948, and 1949. In both the trials at Cedar City and Logan feed-lot gains, cold carcass grades, and dressing percentages were obtained for the lambs. Weight loss in transit to market was obtained on the lambs fed at Cedar City. Feed consumption and percentages of wholesale cuts were also obtained from the groups of lambs fed at Logan.

Data and Discussion

Lambing and Weaning Percentages

THE lambing and weaning percentages of the groups of ewes bred to the two different sires are presented in table 1. The ewes were uniform in age type and were randomly divided for breeding to the Rambouillet and Columbia rams. Since it is commonly

Table 1. Comparative lamb production of grade Rambouillet ewes bred to Columbia rams and grade Rambouillet ewes bred to Rambouillet rams

Breeding of ewes	Ewes bred and alive at lambing	Lambs born†	Lams weaned†	Weaning weight of lambs			Birth weight of lambs			Production per ewe
				Singles	Twins	All	Singles	Twins	All	
	<i>number</i>	<i>percent</i>		<i>pounds</i>			<i>pounds</i>			<i>pounds</i>
Year 1945										
Columbia bred	439	86.7	60.8	.....	.....	.....	80.3	84.5	80.3	48.8
Rambouillet bred	400	91.7	65.7	.....	.....	.....	76.0	62.0	75.9	49.9
Difference		-5.0	-4.9	.....	.....	.....	4.3	22.5	4.4**	-1.1
Year 1946										
Columbia bred	395	106.6	82.8	11.8	9.5	11.1	91.2	82.3	88.8	73.53
Rambouillet bred	396	125.0	92.9	11.0	8.9	10.0	86.8	75.6	82.5	76.64
Difference		-18.4	-10.1	.8	.6	1.1**	4.4	6.7	6.3**	-1.11
Year 1947										
Columbia bred	332	138.6	122.0	12.2	10.4	11.1	94.4	79.1	85.1	103.82
Rambouillet bred	364	123.9	109.1	11.5	9.7	10.7	88.5	77.3	83.9	91.43
Difference		14.7	12.9*	.7	.7	.4**	5.9	1.8	1.3	12.39
Year 1948										
Columbia bred	257	163.7	143.2	13.2	11.3	11.5	91.9	76.9	80.0	114.56
Rambouillet bred	183	174.2	147.0	12.3	10.4	10.6	84.0	73.2	74.6	109.66
Difference		-10.5	-3.8	.9	.9	.9**	7.9	3.7	5.4**	4.90
Year 1949										
Columbia bred	147	152.4	133.3	13.3	11.0	11.5	89.3	75.9	79.6	106.11
Rambouillet bred	77	150.6	131.2	12.3	10.7	11.1	80.1	74.9	76.4	100.24
Difference		1.8	2.1	1.0	.3	.4	9.2	1.0	3.2*	5.87

†Percent lambs born and percent lambs weaned was based on number born or weaned divided by the number of ewes bred and alive at lambing

*Indicates a significant difference

**Indicates a highly significant difference

believed that the number of lambs born is determined by the reproductive activity of the ewe and not influenced by the sire, no large differences in the percent of lambs born should have occurred in the groups of ewes bred to the two different breeds of rams. While considerable variations in both lambing and weaning percentages between the two groups did appear in some years a statistical test showed that the difference in the number of lambs weaned was significant only in 1947. When the combined data for the five years are studied, the differences are small and a statistical test shows that they probably result entirely from chance.

Birth and Weaning Weights

In all five years of the test the average weaning weights of lambs sired by Columbia rams out of grade Rambouillet ewes were consistently larger than the weights of the lambs sired by Rambouillet rams. When all lambs are considered regardless of type of birth, the difference ranged from 6.3 pounds in 1946 to 1.3 pounds in 1947. The differences are even more apparent when single and twin lambs are considered independently (table 1).

Columbia-cross lambs were also heavier at birth than the straight Rambouillet lamb (table 1). Comparisons are more significant when the lambs are considered according to their type of birth. Differences have ranged from .3 pound to 1 pound, with differences of .7 to .9 pounds being most common.

Production per ewe was calculated by multiplying the average weaning weight of all lambs in the group by the percentage of lambs weaned. In two years of the test the Rambouillet-bred group of ewes had slightly higher lamb production figures because of the higher percentage of lambs born. In the other three years lamb production was larger for the Columbia-bred groups. Production per ewe increased markedly in 1946, 1947, and 1948. This was caused largely by the greater production of twins from the ewes and by an increasing proportion of ewes lambing as they became older. There probably was some improvement also in management practices.

Weaning Scores

The "type" and "condition" scores for the Columbia cross and straight-bred Rambouillet lambs for the five years of the test are given in table 2. Data are given for twins and singles as well as for all lambs combined. The single lambs have generally been graded higher for both characteristics (indicating better type and superior condition). The Columbia crossbred lambs had more desirable type scores

Table 2. *Comparative weaning scores for lambs produced by mating grade Rambouillet ewes to Columbia rams and Rambouillet rams*
 (Lower scores indicate higher rating)

Breeding of lambs	Type scores			Condition scores			Percentage of all lambs sufficiently fat for slaughter at weaning time
	Singles	Twins	All	Singles	Twins	All	
Year 1945							<i>percent</i>
Columbia-Rambouillet	1.49	1.40	1.49	1.65	1.63	1.65	19.1
Rambouillet-Rambouillet	1.91	2.60	1.92	1.72	1.60	1.73	4.6
Difference	-.42	-1.20	-.43**	-.07	.03	-.08	14.5**
Year 1946							
Columbia-Rambouillet	1.23	1.36	1.26	2.04	2.49	2.16	52.1
Rambouillet-Rambouillet	1.44	1.87	1.60	2.40	2.91	2.60	24.9
Difference	-.21	-.51	-.34**	-.36	-.42	-.44**	27.2**
Year 1947							
Columbia-Rambouillet	2.48	2.75	2.61	2.74	3.44	3.17	21.7
Rambouillet-Rambouillet	2.73	3.00	2.85	3.09	3.57	3.29	15.1
Difference	-.25	-.25	-.24**	-.35	-.13	-.12**	6.6*
Year 1948							
Columbia-Rambouillet	2.40	2.27	2.67	2.49	3.14	3.00	15.1
Rambouillet-Rambouillet	2.91	3.06	3.05	3.00	3.48	3.42	1.9
Difference	-.51	-.79	-.38**	-.51	-.34	-.42**	13.2**
Year 1949							
Columbia-Rambouillet	2.55	2.91	2.80	2.85	3.30	3.17	22.4
Rambouillet-Rambouillet	3.08	3.21	3.17	3.13	3.39	3.32	5.9
Difference	-.53	-.30	-.37**	-.28	-.09	-.15	15.5**

*Indicates significant difference
 **Indicates highly significant differences

Table 3. Comparative weaning scores for lambs produced by mating grade Rambouillet ewes to Columbia rams and Rambouillet rams

Breeding lambs	Face scores			Body fold scores			Wool length		
	Singles	Twins	All	Singles	Twins	All	Singles	Twins	All
Year 1945									
Columbia-Rambouillet	3.03	3.06	3.03	1.21	1.00	1.21	1.73	2.12	1.74
Rambouillet-Rambouillet	3.30	3.37	3.38	1.59	1.00	1.59	1.43	1.12	1.34
Difference	-.27	-.31	-.35**	-.38	.0	-.38**	.30	1.00	.40**
Year 1946									
Columbia-Rambouillet	2.57	2.52	2.55	1.29	1.07	1.23	1.87	1.84	1.86
Rambouillet-Rambouillet	3.11	3.11	3.11	1.65	1.50	1.58	1.67	1.42	1.60
Difference	-.54	-.59	-.56**	-.36	-.43	-.35**	.20	.42	.26**
Year 1947									
Columbia-Rambouillet	3.10	3.00	3.05	1.59	1.31	1.42	1.88	1.85	1.86
Rambouillet-Rambouillet	3.70	3.65	3.69	2.12	1.72	1.95	1.64	1.54	1.60
Difference	-.60	-.65	-.64**	-.53	-.41	-.53**	.24	.31	.26**
Year 1948									
Columbia-Rambouillet	3.23	3.28	3.26	1.44	1.26	1.28	1.94	1.86	1.85
Rambouillet-Rambouillet	4.03	4.00	4.01	2.04	1.67	1.71	1.50	1.76	1.40
Difference	-.80	-.72	-.75**	-.60	-.41	-.43**	.44	.10	.45**
Year 1949									
Columbia-Rambouillet	3.31	3.25	3.28	1.43	1.19	1.26	1.81	1.75	1.77
Rambouillet-Rambouillet	4.01	4.11	4.08	2.05	1.72	1.81	1.33	1.32	1.32
Difference	-.70	-.86	-.80**	-.62	-.53	-.55**	.48	.43	.45**

**Indicates highly significant differences

Table 4. Comparative feed lot gains, market shrinkage, and grades of R₁ and C₁ lambs 1945-1949

Tests	Lambs	On feed	Average daily gain	Shrinkage in transit*	Yield†	Carcass grades					
						Choice		Good		Commercial	
	number	days	pounds	percent	percent	no.	percent	no.	percent	no.	percent
1945-46											
Field fattening											
C ₁	150	21	.45‡	.....	.....	....	.....	....	.....	....	.....
R ₁	138	21	.40‡	.....	.....	....	.....	....	.....	....	.....
Dry lot feeding											
1st. period											
C ₁	149	37	.43§	9.2	44.5	57	67.06	26	30.59	2	2.35
R ₁	137	37	.39||	9.6	45.0	39	72.22	15	27.78	0	0.00
2nd. period											
C ₁	64	57	.33	10.0	44.3	55	85.94	9	14.06	0	0.00
R ₁	83	57	.33	11.1	45.3	68	81.93	14	16.87	1	1.20
1946											
Field fattening											
C ₁	37	56	.37	9.7	43.3	26	70.27	9	24.32	2	5.41
R ₁	125	56	.37	10.5	42.4	24	19.20	34	27.20	67	53.60
1947											
Field fattening											
C ₁	66	39	.31‡	.....	.....	....	.....	....	.....	....	.....
R ₁	72	39	.24‡	.....	.....	....	.....	....	.....	....	.....
Dry lot feeding											
C ₁	66	34	.52	13.8	45.8	10	16.95	36	61.02	13	22.03
R ₁	72	34	.51	14.5	46.3	4	6.25	40	62.50	20	31.25
1948											
Field fattening											
C ₁	22	64	.41	7.3	48.2	2	9.09	17	77.27	3	13.64
R ₁	20	64	.43	6.6	48.4	1	5.00	20	50.00	9	45.00

Table 4. Comparative feed lot gains, market shrinkage, and grades of R₁ and C₁ lambs 1945-1949 (continued)

Tests	Lambs	On feed	Average daily gain	Shrinkage in transit*	Yield†	Carcass grades					
						Choice	Good		Commerical		
	<i>number</i>	<i>days</i>	<i>pounds</i>	<i>percent</i>	<i>percent</i>	<i>no.</i>	<i>percent</i>	<i>no.</i>	<i>percent</i>	<i>no.</i>	<i>percent</i>
1949											
Field fattening											
C ₁	34	42	.41	.....	48.7	....	.....	19	55.88	15	44.12
R ₁	17	42	.41	.....	49.5	....	.....	6	35.29	11	64.71
Combination of field and dry lot fattening											
1st. group											
C ₁	12	77	.41	.....	48.3	....	.....	6	50.00	6	50.00
R ₁	10	77	.39	.....	48.0	....	.....	3	30.00	7	70.00
2nd. group											
C ₁	8	141	.32	.....	46.3	....	.....	1	50.00	1	50.00
R ₁	4	141	.39	.....	42.9	....	.....	7	70.00	3	30.00

*Shrinkage in transit based on stockyard weight and off car Los Angeles weight

†Percentage yield based on farm weight in relation to cold carcass weight

‡Indicates finished in dry lot

§Indicates that 86 lambs were marketed

||Indicates that 54 lambs were marketed

Table 5. *Feed lot trials at Logan with Columbia-Rambouillet and straight bred Rambouillet lambs*

	Lambs On feed		Average daily gain	Average feed consumption per sheep	
	number	days	pounds	Alfalfa	Grain
Year 1946					
Columbia-Rambouillet	25	80	.365	143.2	96 barley 47.2 D.M.B. pulp 143.2
Rambouillet	25	80	.372	129.6	96.8 barley 48.0 D.M.B. pulp 144.8
Year 1947					
Columbia-Rambouillet	32	113	.350	176.56	145.98*
Rambouillet	32	113	.375	178.89	150.46*
Year 1948					
Columbia-Rambouillet	32	92	.280	97.7	149.2†
Rambouillet	32	92	.265	96.3	147.6†
Year 1949					
Columbia-Rambouillet	17	97	.327	153.1	119.2‡
Rambouillet	15	97	.330	159.2	123.3‡

*200.0 lb. barley
100.0 dig. beet pulp
3.0 salt
1.5 bonemeal

† 65.5 lb. barley
33.0 D. M. beet pulp
1.0 salt
0.0 steamed bonemeal

‡ 65.5 lb. wheat or barley
33.0 D. M. beet pulp
1.0 salt
0.5 deflourinated phosphate or bonemeal

as well as a higher degree of finish in all five years of study. The differences in condition scores, however, were not statistically significant in 1945 and in 1949.

The commercial buyer graded a higher percentage of the cross-bred lambs as "fat" in all five years of the test. The difference in favor of the Columbia crosses has ranged from 6.6 percent in 1947 to 27.2 percent in 1946. This difference was of considerable economic importance as the spread in price between fat and feeder lambs was 2 to 3 cents per pound during the five years of the study.

Weaning scores for face covering, body folds, and wool length may be seen in table 3. These characteristics may not be of as much immediate economic importance as weaning weights or finish scores, but they affect the value of the wether lambs as feeders and affect

to a considerable extent the value of the ewe lambs for replacement purposes.

The Columbia crosses have longer fleeces with more open faces and smoother bodies than the straight bred Rambouillet lambs. Face scores and fleece length scores are similar for twin and single lambs. Twin lambs, however, graded considerably lower in their body fold scores, or in other words had smoother bodies than single lambs. This difference between the development of folds in single and twin lambs was also found by Hazel and Terrill (6) in lambs at the Dubois Station. Carter (2) found that the development of folds in Merinos was reduced on low plane nutrition.

Feeding Tests

RESULTS of feeding trials at Cedar City are shown in table 4, and of trials at Logan in table 5. There has been some variation between rate of gain in Columbia-Rambouillet crosses and straight Rambouillet bred lambs, but the differences have not been consistent and probably result from chance. These tests were made with lambs remaining after those fat enough for slaughter at weaning were sold. This selection probably removed the fast gaining lambs and left those of similar feeding and gaining qualities. Since a higher percentage of Columbia crossbred lambs were fat at weaning time, it is probable that if the feeding tests had been conducted with groups of unselected lambs with similar finish the crossbred lambs would have made faster and possibly more economic gains. The lambs at Cedar City were fed as one group in all of the tests so that economy of gain could not be determined for crossbred and Rambouillet lambs. The lambs at Logan were either fed individually or by groups so that their comparative feed consumption could be checked, but the differences between the two groups have not been significant.

Shipping and Slaughter Data

SHIPPING and slaughter data for the lambs sent to market directly from the range are shown in table 6. Similar information for the lambs finished on the farm are shown in table 4. No consistent differences were shown by the crossbred and straight bred Rambouillet lambs in their shrinkage in shipping from Cedar City to Los Angeles. Because of the variation encountered and the small numbers of lambs in the tests these data were not obtained by groups in 1949.

Dressing percentages or yields were calculated by dividing the cold carcass weights by the farm or ranch weights. The straight

Rambouillet bred lambs generally killed out a little higher than the crossbred lambs. The pelts were weighed in the test at Logan and data indicate that the difference is probably caused by the heavier woolled pelts of the Columbia crosses.

Table 6. *Shipping and slaughter data for lambs sold as grass fat at weaning time*

	Shrinkage		Dressing percent	Carcass grades		
	Lambs in transit percentage			Choice	Good	Commercial
Year	number	percent	percent	number		
Year 1946						
Columbia-Rambouillet	85	6.4	47.1	54	31	0
Rambouillet-Rambouillet	54	6.6	47.2	27	27	0
Year 1947						
Columbia-Rambouillet	55	7.7	50.3	34	20	1
Rambouillet-Rambouillet	34	7.2	50.8	11	21	2
Year 1948						
Columbia-Rambouillet	30	5.0	51.6	0	26	4
Rambouillet-Rambouillet	5	3.1	54.5	1	3	1
Year 1949						
Columbia-Rambouillet	22	....	48.7	0	10	12
Rambouillet-Rambouillet	4	....	48.2	0	3	1

Lambs in the feeding tests at Cedar City have generally been sold when they were fat enough for slaughter, and two or three shipments were sometimes made during one year's feeding operations. Carcass grades of the Columbia crosses and straight bred Rambouillet lambs were similar. In the tests at Logan, however, all lambs were slaughtered at the end of the feeding period. In these tests Columbia crosses have consistently ranked higher in carcass grade than straight Rambouillets. Little difference in percentage of wholesale cuts has been shown between crosses and straight bred Rambouillet lambs.

Summary

RANGE ewes predominately of Rambouillet breeding were bred to Columbia and Rambouillet rams. Birth and weaning characteristics together with the feed lot performance of their offspring were compared.

The results of the tests conducted over a period of 5 years with 839 to 244 ewes in each year's tests are summarized as follows.

1. Columbia-sired lambs were consistently heavier at birth and also heavier at weaning than lambs sired by Rambouillet rams. Average difference in weaning weights for the 5 year's tests was 4.1 pounds.

Table 7. Slaughter yields of C₁ and R₁ lambs from Logan tests

	Lambs	Dressing	Pelt	Cold carcass grades			Stew	Wholesale cuts		
		percent	weight	Choice	Good	Comm.		Rack	Loin	Leg
	<i>number</i>	<i>percent</i>	<i>pounds</i>	<i>number</i>				<i>percent</i>		
Year 1946										
Columbia-Rambouillet	25	47.2	17.37	22	3	....	34.43	17.11	20.28	28.18
Rambouillet cross	25	48.4	16.36	19	6	....	34.12	17.08	20.43	28.36
Year 1947										
Columbia Rambouillet	32*	49.0	20.59	5	23	3	35.92	16.49	16.94	30.65
Rambouillet	32	49.5	19.95	4	23	5	36.49	15.75	16.41	31.35
Year 1948										
Columbia-Rambouillet	32	46.0	20.68	....	13	19	37.84	13.16	16.53	32.48
Rambouillet	32	45.9	19.62	....	8	20	37.96	13.19	15.69	33.15
Year 1949										
Columbia-Rambouillet	17	47.0	15.54	....	5	12		Lambs not cut into commercial cuts in 1949		
Rambouillet	15	48.1	16.10	....	3	12				

*One lamb died enroute to Ogden, not figured in percentage yield

2. Columbia crossbred lambs were fatter at weaning time, and a higher proportion of them were sent directly to market.
3. Columbia-sired lambs were more open in their faces, and had longer fleeces than lambs sired by Rambouillet rams.
4. Feeding tests indicated no significant difference in rate of gain or economy of gain between the two groups of lambs.
5. Dressing percentages were slightly higher for Rambouillet sired lambs probably because of the greater amount of wool on the crossbred pelts.
6. Carcass grades were higher for crossbred lambs than for Rambouillet lambs when both were fed over the same period.
7. The percentage of wholesale cuts was similar in the carcasses of the two groups of lambs.

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