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# CATTLE-RANCH ORGANIZATION IN THE MOUNTAINS OF COLORADO

By

R. T. BURDICK      MARTIN REINHOLT  
G. S. KLEMMEDSON



IN COOPERATION WITH DIVISION OF FARM MANAGEMENT AND COSTS, BUREAU OF  
AGRICULTURAL ECONOMICS AND BUREAU OF ANIMAL INDUSTRY, U. S. D. A.

COLORADO EXPERIMENT STATION  
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# CATTLE-RANCH ORGANIZATION IN THE MOUNTAINS OF COLORADO

## SUMMARY

There was a steady decrease in the number of cattle in Colorado during the years 1922 to 1925 included in this study. There was, however, an actual increase in the shipments of cattle to market as shown by the total reported slaughter at sixty-eight central markets and the receipts of Colorado cattle at the Denver stockyards.

Cattle are an important source of income in all the mountain counties of Colorado except in a few purely mining areas. Some adjustment is taking place in the agriculture of the state due to the introduction of more cash-crop production.

The mountain ranches were grouped into three areas for part of this study, namely, the North Park area, the San Luis Valley-Gunnison area and the eastern foothills area. Conditions in these three areas differ enough to produce variations in the methods of handling cattle.

Early development of cattle production in Colorado mountain areas followed closely upon the discovery of mines and the building of railroads. Over-grazing became evident at an early date because cattle ran free and there was no control of the number.

The creation of the national forests, starting in the 90's, was the first step in securing some control of the range. This control had developed until by 1922 the forest grazing in Colorado was practically without exception on a permanent grazing basis and was improving rather than deteriorating.

The size of cattle herds on the 32 ranches studied averaged 800 head without calves. The number of cattle varied from 2,618 to 162 head.

The ranch area varied from 860 to over 55,000 acres. About two-thirds of the land was owned. Four men owned all the land they used (other than the national forest).

Grazing land was valued at from \$4 to \$22 per acre with an average of \$9.65. Grazing land was leased at from 10 to 25 cents per acre in most instances which was about 2 percent on the estimated value per acre and was practically equivalent to the taxes per acre of owned land.

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The authors are especially indebted to the cattlemen who extended such hospitality and friendly cooperation toward the field representative and who so willingly gave him the information pertaining to their ranch organization and practices upon which this publication is based.



The average investment was over \$100,000 of which a little over one-third was in cattle. Improvements were about \$10,000 per ranch and equipment about \$2300.

Only two ranches were free from debt. The cattle debts amounted to about \$18 per head of cattle and 40 percent of the total indebtedness.

Cattle were the chief source of income except on three ranches that had bands of sheep. Three other men had considerable crop income.

Labor, taxes and feed were the chief items of expense.

The average for 32 ranches shows 2.74 percent return on total investment. Only five men had no available cash for personal expense while the average for all was slightly over \$2000. The returns in 1925 were nearly double those in any other year. The year 1922 showed the poorest returns.

The ranch expense per head of cattle was \$10.32 without interest and \$18.38 including interest at 6 percent on the investment. The breeding herd figures were \$4.02 higher in each case due to death loss and depreciation.

Growing cattle put on from 200 to 250 pounds per head per year. Aged steers made about the same gains as younger cattle. If these gains are typical, ranchmen can afford to hold steers on the range until three years of age, provided prices are satisfactory.

In order to pay interest on the investment the cattle on the ranches included in this study should have sold at from \$7 to \$9 per hundredweight, depending on the age.

Forty-five percent of the cattle included in this study were run on the national forest during the summer, the balance using fenced pastures and public domain. The use of fenced pastures increased the expense of operating the ranch.

Grazing begins on the national forests from June 15 to July 1 in the North Park area, and a month earlier in the San Luis and foothill areas. As a result, North Park cattlemen have a problem finding adequate grazing in the spring prior to the opening of the national forests.

North Park ranches did not produce all the hay needed for winter feed, showing a tendency on the part of cattlemen to rely on the purchase of hay from adjoining ranches to carry their cattle thru. Ranches in other parts of the state produced practically all the winter roughage used.

It took approximately 3300 pounds of hay per cow for wintering in North Park while only 1900 pounds were required in the San Luis Valley and 1100 pounds in the foothills, showing the influence of climate and grazing practice on the amount of feeding necessary.



No grain was fed to cows. Very little grain was fed to any class of stock. The foothill area used more grain than either of the other areas as they were able to raise their own grain and it was cheaper.

The percentage calf crop varied from 39 to 91 with an average of 64. Running the breeding herd in fenced pastures produced a calf crop 11 percent higher than on the national forests. The men who fed one dollar's worth of extra grain per bull secured a 9 percent increase in calf crop. Thirteen ranches bred their heifers to calve as three-year-olds and secured calf crops 12 percent better than those whose heifers dropped their first calves as two-year-olds.

The actual period of use of cows in the breeding herd was 4.3 years, and for bulls, 3.9 years.

Except in a few instances, death losses were comparatively low, due largely to proper winter feeding and eradication of poisonous plants.

The number of months of labor used per ranch decreased steadily from 68 in 1922 to 52 in 1925, showing a tendency to cut expenses and do without. In 1922, the operator performed 14 percent of the total labor which increased to 24 percent in 1925. Labor cost averaged \$86 per month including value of board. The men working exclusively with cattle handled 524 head per man.

Denver received from 60 to 80 percent of all cattle shipped from these ranches. Net prices for ranch sales were usually as high as net sales on the central markets.

Auction sales in Iowa were used extensively in 1923 and 1924. They were discontinued in 1925 due to high costs, better prices at the central markets and general dissatisfaction.

A cautious policy in the face of wide price fluctuations and strict economy in the operation of the ranch, coupled with skill in handling cattle, were the most valuable aids in securing some measure of profit from a depressed cattle business. However, the men who combined other enterprises with cattle did better than the 100 percent cattlemen.

## INTRODUCTION

The cattle industry of Colorado developed first on the plains. Later, after roads and trails had opened the mountain region, many fertile valleys and heavily sodded areas were found in among the mountains. Where these areas opened out to any considerable extent they were given the name of "parks." These mountain parks of Colorado are noted for the quality of livestock which they produce.





Figure 1.—A typical mountain valley.

When the cooperative project in studying the cattle business was started in 1922 (see Colo. Bul. 327 for reasons for making study), it was apparent that the records could be made more valuable if they were grouped to keep the prairie and mountain ranches separate. Bulletin 327 has given some of the important results for the prairie ranches. This report will be confined chiefly to an analysis of the mountain ranches together with comparisons showing differences between the two areas.

**Soil, Climate and Vegetation.**—The mountain section of Colorado is very broken in its topography. Wide variations exist both in the quality and depth of the soil and in the amount of rainfall. No soil studies have ever been made. Many of the mountain parks were originally lake bottoms or old stream beds. In the open parks, such as North Park and the San Luis Valley, the rainfall on the valley floor is less than 13 inches with small areas less than 10 inches. But as soon as one approaches the slopes up into the mountains proper, the rainfall increases very rapidly and sufficient water falls to grow a very high quality of grazing plants and furnish abundant water for the irrigation of hay on the lower valley floors.

Bunch grass, blue stem, sedge, bent grass, wheat grass, gramma grass, fescue and brome grass are all found on the range. Practically all are highly palatable. In some places weeds represent 30 to 70 percent of the vegetative cover, due frequently to former overgrazing, but in recent years proper regulation is bringing back a better stand of the palatable grasses.

**Production of Cattle.**—Analysis of cattle production in the area studied as compared to the United States as a whole, is made diffi-



cult by the fact that there are no public records of cattle production. The only available records show the numbers of all cattle on farms January first and the slaughter of cattle at sixty-eight public markets

TABLE 1.—Number Cattle on Farms and Yearly Slaughter.  
(000 omitted)

Year	No. on farms in United States	No. in Colorado	No. Slaughtered at 68 markets	Slaughter as a percentage of number first of year
1915	58,329	1,201	7,912	13.6
1916	61,920	1,315	10,294	16.7
1917	64,583	1,437	13,275	20.6
1918	67,422	1,526	14,874	22.1
1919	68,560	1,625	13,633	19.9
1920	68,871	1,627	12,194	17.7
1921	67,184	1,683	11,078	16.5
1922	67,264	1,604	12,435	18.5
1923	66,156	1,614	13,030	19.7
1924	64,509	1,540	13,850	21.5
1925	61,996	1,465	14,462	23.4
1926	59,148	1,377	14,350	24.3

for each year. These, at best, only give an estimate of the situation. There is no record of cattle slaughtered in small towns nor on farms; neither is there any record of calves born each year.

Another thing that complicates such an analysis is the fact that there is a wide range of age and condition during which cattle may be sold. Cattle may go to market as calves, yearlings, two-year-olds, aged steers or canner bulls and fat cows.

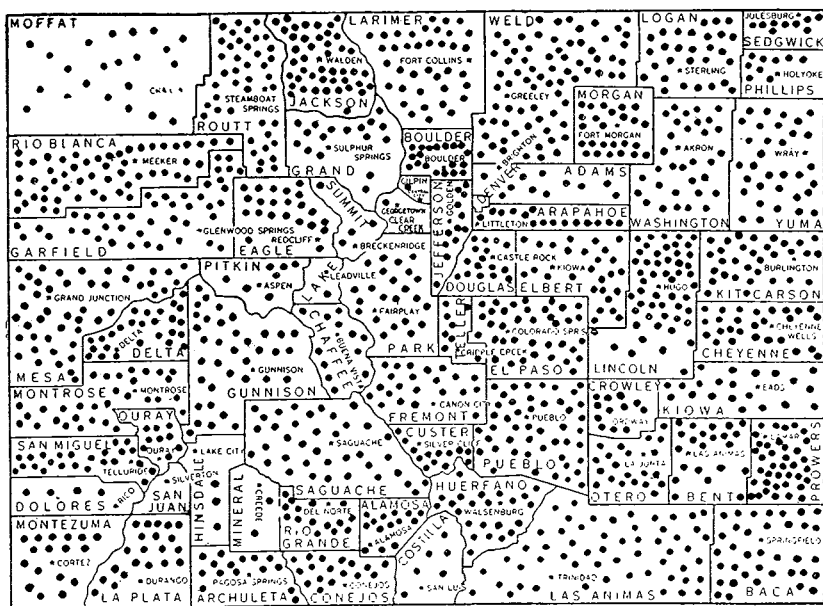
Receipts and slaughter at the markets may continue for several years at normal levels while herds are steadily dwindling on the range. This is possible by sending cattle to market at earlier ages each year. Such a condition has actually developed since 1920 and may be considered the background of the cattle price situation during this period.

The records of cattle slaughtered at public stockyards are available since 1915. Table 1 shows the number of all cattle on farms in the United States and for Colorado and the cattle slaughtered at public markets. Since 1920 the number of cattle in the United States and in Colorado has been steadily diminishing. The number slaughtered shows no decrease. In fact, 1925 and 1926 show a greater slaughter than any other years except 1918. In 1926, the number of cattle slaughtered was equivalent to over 24 percent of the number of cattle reported on farms the first of the year. This figure shows a steady increase since 1921 when only 16.5 percent were slaughtered.

In 1922, when this study was undertaken, there were 67,264,000 cattle on farms in the United States; 1,604,000 of these, or 2.4 percent, were in Colorado. During 1922, the number slaughtered was 12,435,000 or the equivalent of 18.5 percent of the number on hand the first of the year.



In 1925, the last year included in this study, there were 61,996,000 cattle on farms in the United States or a reduction of 8 percent from 1922, while cattle slaughtered had increased to 14,462,000 or nearly 17 percent increase compared to 1922. The only way this increased slaughter can be accounted for is thru sale of the foundation cattle herds or selling younger-aged stock. It is a question how much of this heavy slaughter was due to necessity, where money had to be secured to meet indebtedness, and how much of it was due to being discouraged with the cattle business and closing out at any price. Both were apparently responsible as the number of cattle in the United States in 1926 was as large as it was in the years prior to the World War. In the years ending with 1920, cattlemen were increasing their herds very rapidly. By 1926, this increase had entirely disappeared but at heavy losses to producers.



Each dot represents 1,000 beef cattle.

Figure 2.—Distribution of beef cattle in Colorado at the start of this study. (Colorado Yearbook, 1922, Page 99.)

**Distribution of Cattle Production in Colorado.**—The accompanying map of Colorado shows that range cattle are well distributed over the entire state. Differences in the number reported for each county in the western half of the state are partly due to the influence of mountains, lack of forage and size of county rather than to any pronounced variation in the type of farming. In the eastern half of



the state irrigation agriculture and dry farming combine to reduce the number of cattle below the possible number.

**Products That Compete With Cattle Production.**—During the years included in this study sheep increased in numbers in the western mountain areas of Colorado. Frequently both cattle and sheep were run by the same man. National forests that had long been the exclusive feeding ground for cattle were used also for sheep. The relative profit from the two was responsible for this adjustment. There were indications toward the end of 1925 that cattle were increasing in numbers again but it will be some years before the Colorado national forests will be stocked as heavily with cattle as before the war.

To a limited extent there has been another factor tending to reduce the cattle production in the mountains. Where the land is proving suitable for head lettuce and green vegetables, these crops are replacing grazing and hay production. In 1921, there were 3,524 acres of head lettuce and green peas in Colorado. In 1925, this acreage had increased to 16,580. Much of this increase occurred in important cattle counties.

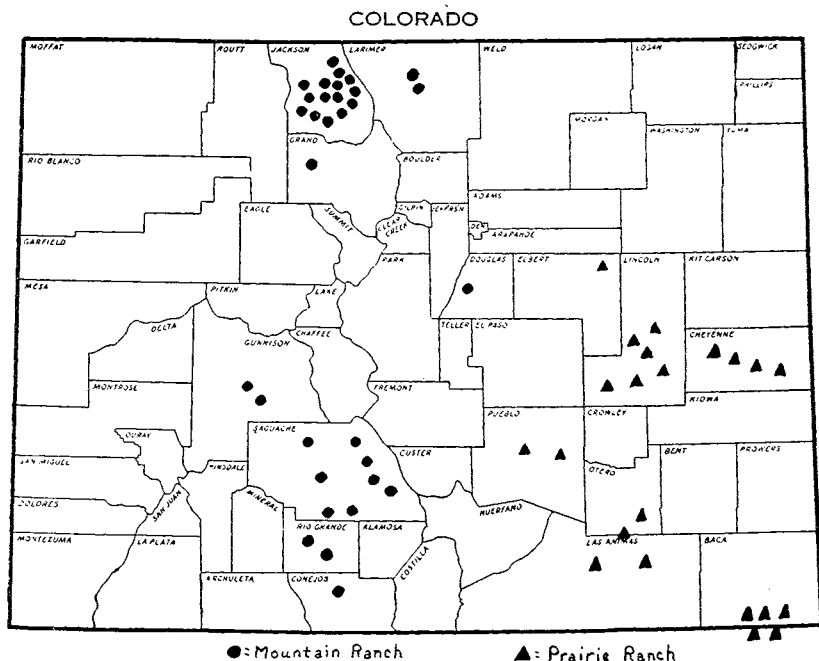


Figure 3.—Location of ranches studied in this bulletin and in bulletin 327.

**Location of Ranches.**—The accompanying map shows the location of the 32 ranches on which records were secured for one or



more years. Fourteen records were secured for 4 years, three for 3 years, fourteen for 2 years and one for 1 year.

**Development of Ranching in the Mountain Area.**—The early development of the cattle industry in the mountain parks of Colorado was coincident with the growth of the mining industry which started permanently in 1858 at Cherry Creek and grew in extent more or less continuously until 1890 and thereafter.

Little attempt could be made to ship cattle to the outside markets until the railroads, which were built because of the mining boom, had made shipment of cattle possible.

The first car of cattle reported shipped to Denver from Gunnison came two years after the Denver and Rio Grande had completed its railroad to that point in 1881 and these cattle had been driven 100 miles to the railroad.<sup>1</sup>

Some of the herders of cattle in the parks on the east of the continental divide found a market by trailing the cattle to Denver or Laramie.

The personal experience of one rancher in North Park illustrates the development of ranching and some of the early problems. This man began operations in 1887 and found some cattlemen who had preceded him by five to seven years, indicating that the earliest cattle in the park came about 1880. Land was secured by homestead under some or all of the government homestead laws. This did not give enough land for a practical cattle ranch so additional land was secured by buying out individual homesteads or by hiring men who would homestead and then sell out.

The only outlet for the cattle from North Park was by trail either over the Medicine Bow range, 70 miles to Laramie, or down the North Platte, 80 to 90 miles, to the Union Pacific railroad.

The mountain pasture grasses proved highly nutritious. Cattle made good gains. Soon the number of cattle in North Park had increased until the limiting factor was the availability of summer range. The peak of cattle production was reached in 1919. The 1920 census shows 44,156 beef cattle in Jackson County, the assessor listed 45,270 head for the same year. The 1925 census shows a reduction to 31,403 while the assessor's figures show 32,000 for the same year.

**Transportation Conditions in the Mountain Region.**—This early development as stated above was intimately tied up with the growth of railroads. The History of Colorado gives the following dates as the time of completion of railroads to designated towns: Alamosa, 1878; South Park, 1879; Buena Vista, 1880; Gunnison, 1881; Glen-

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<sup>1</sup>History of Colorado, vol. 2, p. 691.



wood Springs, 1888; Steamboat Springs, 1908; Walden, 1911; and Craig, 1913.

Some of the cattle country did not secure railroad outlets until well into the twentieth century. Many of the early lines were narrow gauged and cattle shipments were expensive. While railroads now lead out of all of the more important mountain parks, much of the land available for grazing is even yet 50 or more miles from the nearest shipping point.

**Control of the Range.**—The present status of the cattle industry in the mountain areas is intimately related to the work of the United States Forest Service. A brief review of its development and policies will show how conditions have changed.

There was no control of grazing in the mountain valleys when cattle first penetrated the hills. "First come first served" was the rule. Control of water and hay land was sought by homestead and purchase for permanent ranches but cattle could graze in summer as long as men could be found to tend them. As a result too many cattle were grazed. The eastern foothill area was overgrazed or "raw-hided" the worst because it was close to the plains and more cattle could reach the foothills for summer grazing.

In the 90's the national forests were created. In 1898 began the first attempt at control of the range thru permits and allotments. The early attempts were crude, unsatisfactory to all concerned, did not prevent overgrazing and were the source of constant dissatisfaction. In 1906 the Forest Service inaugurated fees for the use of the range. Men better versed in the problems of range grazing went into the Forest Service and a sound policy of management was developed.

The grazing land of the national forests has been carefully surveyed and classified as to type of vegetation and carrying capacity. Long-time management plans have been worked out with the object of restoring the best grasses and preventing overgrazing. The different points considered by the Forest Service in these surveys have been:

1. Description of allotment.
2. Capacity, in head per season, estimated and checked with actual use.
3. Season available for grazing.
4. Management advised as to salting, herding, etc.
5. Trespass—indicating danger of overgrazing by unauthorized excess numbers.
6. Improvements, actual and needed.
7. Special rules for improvement in grades of cattle and in handling and protection.



8. Losses of stock and reason.
9. Forest reproduction and soil erosion, effect of grazing upon.
10. Wild life and conflict, if any, with stock.
11. Rodents and damage.
12. Studies needed of forage growth.
13. Inspection of range to check on working of plan.

By the use of this comprehensive method of analysis the Forest Service has been able to adjust grazing permits so that the range is improving in carrying capacity and in some instances is practically restored to its original state.

The grazing fees charged are less than the cost of grazing under other methods such as lease or ownership. The present trend of policy is to honor preferences as to grazing allotment and advocate ten-year permits.<sup>1</sup>

As cattlemen and sheepmen learn that the purpose of the Forest Service is to aid in a wise use of the grazing, they are working with the forest rangers and doing their part to improve the range.

**Possibility of Expansion Into Other Types of Agriculture.**—The mountain areas of Colorado are well adapted to grazing. To a certain extent they represent the last stronghold of a purely grazing type of agriculture. Man has replaced the former herds of buffalo, elk and deer, that roamed the hills, with controlled grazing of cattle and sheep. From the viewpoint of the cattleman, sheep are the most serious competitors for this land. In some ways they are better adapted to the rough pasture than are the cattle yet they are more susceptible to attacks of wild animals. As prices for the two vary, the ranchmen will attempt to adjust their flocks and herds. If they are no more successful at this adjustment than they have been in the past, we may expect the cattle herds to be low when prices have reached a turn for the better, and herds increased in time to see low prices again. A safe course would appear to involve a decision as to the most economical size of flock or herd that an operator could handle under his conditions; then keep to that plan regardless of price change. If sheep and cattle are going to alternate in profitability, a division between the two might assure a more uniform income, free from either excessive losses or feverish profits.

The future of either cattle or sheep grazing in the larger mountain parks depends to some degree upon the development of a more profitable type of farming. If lettuce, for example, can show consistently greater profits it will attract the farmers and cattle will be

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<sup>1</sup>U. S. D. A. Bul. 790, "Range Management on the National Forests," is an excellent review of the problems of range management and ways whereby grazing may be improved. It should be studied by every user of the national forest. U. S. D. A. Circ. 379, "The Use of Salt in Range Management," is also worthy of study.



neglected. However, before lettuce or any other perishable or bulky crop can prove successful, the present transportation methods will need radical improvement and freight rates must be reduced from their present levels. The population of the United States will increase far beyond its present numbers before there will be sufficient demand for the products which can be grown at high altitudes so that they can be grown on large enough areas to appreciably affect the mountain-cattle industry.

TABLE 2.—Size of Herds: Average Number of Each Class for Period Studied.

Ranch No.	Calves	Total except calves	Cows	Bulls	Yearling		Two-year-old		Aged steers
					Heif-ers	Steers	Heif-ers	Steers	
50	1001	2618	1461	106	476	400	.....	122	53
25	973	2592	1398	70	365	233	272	178	76
19	715	1773	1080	45	205	170	107	96	70
26	766	1700	958	51	267	210	190	24	.....
48	397	1095	765	32	142	130	11	15	.....
10	345	1036	457	28	153	147	120	127	4
23	374	988	465	21	176	144	139	34	9
38	317	926	665	19	150	80	.....	11	1
14	302	793	472	21	131	132	.....	37	.....
43	312	724	479	30	109	93	.....	13	.....
1	211	679	313	13	100	102	96	48	7
15	243	655	372	18	97	98	.....	56	14
69	205	630	367	22	85	66	55	32	3
68	307	627	379	26	106	94	.....	22	.....
53	222	623	276	17	107	92	82	49	.....
36	195	616	281	13	122	109	6	80	5
7	178	554	216	14	82	82	56	32	72
3	204	541	241	12	94	91	64	38	1
40	154	515	281	9	76	71	69	9	.....
2	171	505	306	11	84	64	.....	36	4
35	178	500	260	12	82	87	.....	59	.....
16	171	451	255	14	86	61	.....	18	17
66	150	439	190	9	69	68	70	32	1
34	144	428	193	12	72	65	71	15	.....
47	136	336	249	11	42	24	.....	10	.....
70	115	334	188	5	49	50	.....	42	.....
62	115	307	171	7	52	44	.....	31	2
67	131	305	187	7	45	46	18	2	.....
63	109	283	131	6	59	40	45	2	.....
64	82	248	94	4	39	47	28	36	.....
61	36	172	79	3	18	16	23	19	14
65	58	162	72	3	29	20	32	6	.....
Av.	298	800	438	22	126	104	55	44	11

## ORGANIZATION OF RANCHES STUDIED

1. **Size of Herd.**—The number of head of cattle other than calves, was selected as the most reliable measure of size for the mountain ranches. The area owned or leased tells only part of the story as the area of the national forests available for grazing is equally important but impossible to estimate. The combined grazing area available from all sources is used to the maximum in most instances, consequently the head of cattle owned gives the most reliable indication of the size of business.



In Table 2 the 32 ranches are arranged on the basis of number of cattle owned with ranch 50, having 2,618 head of cattle, at the top. Twelve ranches show no two-year-old heifers because they are included with the cows, seventeen ranches have aged steers which include three-year-old and a very few older steers. The average-sized herd for all ranches is 800 head.

2. **Area of Ranches.**—The land either owned or leased on the mountain ranches is shown in Table 3. The ranches in this table are in the same sequence shown in Table 2. Four ranches, including the largest ranch, have no leased land. Ranch 48 leases 70.8 percent of its area. For the 32 ranches, slightly over two-thirds of the area controlled is owned and the balance leased.

TABLE 3.—Area of Ranches: Average for Period Studied.

Ranch No.	Number of years studied	Total area	Area owned acres	Area leased acres	Per-cent owned	Per-cent leased
50	2	55,703	55,703	—	100.0	—
25	4	11,978	5,120	6,858	42.7	57.3
19	2	7,021	3,475	3,546	49.5	50.5
26	4	10,360	8,960	1,400	86.5	13.5
48	3	6,034	1,760	4,274	29.2	70.8
10	4	7,840	5,600	2,240	71.4	28.6
23	4	7,634	4,278	3,356	56.0	44.0
38	4	1,740	1,740	—	100.0	—
14	4	8,400	4,400	4,000	52.4	47.6
43	3	4,300	1,400	2,900	32.5	67.5
1	4	2,789	2,624	165	94.1	5.9
15	4	7,525	6,420	1,105	85.3	14.7
69	2	3,250	1,360	1,890	41.8	58.2
68	2	2,360	2,040	320	86.5	13.5
53	4	1,768	968	800	54.7	45.3
36	4	6,151	3,540	2,611	57.5	42.5
7	2	4,720	2,880	1,840	61.0	39.0
3	4	6,360	2,100	4,260	33.0	67.0
40	2	1,800	1,360	440	75.5	24.5
2	4	2,071	915	1,156	44.2	55.8
35	2	5,933	2,800	3,133	47.2	52.8
16	4	1,771	1,660	111	93.7	6.3
66	2	1,960	1,000	960	51.0	49.0
34	4	860	700	160	81.4	18.6
47	3	2,640	1,040	1,600	39.4	60.6
70	1	5,750	5,040	710	87.7	12.3
62	2	2,215	1,465	750	66.2	33.8
67	2	1,060	960	100	90.6	9.4
63	2	2,150	900	1,250	41.8	58.2
64	2	1,410	1,410	—	100.0	—
61	2	1,360	1,120	240	82.3	17.7
65	2	1,480	1,480	—	100.0	—
Av.	94	5,728	3,932	1,796	68.6	31.4

3. **Use of Land.**—Table 4 shows some of the variations in use and value of land. Practically all the leased land was used for pasture. Nearly 1000 acres of owned land was used for hay or other crops. Pasture land was valued at from \$4 to \$22 per acre with an average of \$9.65. It was leased for \$0.18 per acre which is 2 percent on the estimated value.



TABLE 4.—Use and Value of Land: Average for the Period Studied.<sup>1</sup>

Ranch No.	Owned land				Leased land				Total acres		
	Total area	Acres pasture	Acres hay and crops	Value per acre		Total area	Acres pasture	Acres hay and crops		Cost of leases per acre	
				Pasture	Hay and crops					Pasture	Hay and crops
50	55,703	50,524	5,179	\$ 6.61	\$26.44	6,858	6,258	600	50,524	5,179	
25	5,120	1,960	3,160	8.93	28.28	3,546	3,516	30	8,218	3,760	
19	3,475	1,475	2,000	12.22	34.93	1,400	1,400	.....	4,991	2,030	
26	8,960	7,280	1,680	15.30	30.42	4,274	4,114	160	5,174	1,680	
48	1,760	1,060	700	21.88	84.70	2,240	2,160	80	6,760	860	
10	5,600	4,600	1,000	14.97	29.33	3,356	3,231	125	6,109	1,080	
23	4,278	2,878	1,400	7.26	34.39	1,890	1,890	.....	1,525	1,025	
38	1,740	640	1,140	19.89	34.46	4,000	4,000	.....	600	1,140	
14	4,400	3,200	1,200	10.09	29.86	2,900	2,900	.....	7,200	1,200	
43	1,400	600	800	9.03	27.80	1,65	1.12	.....	3,500	800	
1	2,624	1,124	1,500	12.92	29.85	1,105	1,105	.....	1,289	1,500	
15	6,420	6,120	300	9.35	39.87	1,890	1,890	.....	7,225	300	
69	1,360	720	640	16.66	48.96	320	320	.....	2,610	640	
68	2,040	1,040	1,000	9.99	24.96	800	800	.....	1,300	1,000	
53	968	453	515	9.61	74.47	2,611	2,611	.....	1,253	515	
36	3,540	3,100	440	6.97	74.60	1,840	1,840	.....	5,711	440	
7	2,880	1,780	1,100	11.43	29.93	4,260	4,260	.....	3,620	1,100	
3	2,700	1,375	525	10.02	49.31	440	440	.....	5,835	525	
40	1,360	660	700	15.61	44.90	1,156	1,125	31	1,100	700	
2	915	315	600	9.85	34.57	3,133	3,133	.....	1,440	631	
35	2,900	2,000	900	4.98	39.84	111	111	.....	5,133	800	
16	1,660	1,348	312	15.76	56.60	960	960	.....	1,459	312	
66	1,000	500	500	9.59	20.00	160	160	.....	1,460	500	
24	700	400	300	13.83	49.38	1,600	1,253	347	560	300	
47	1,040	340	700	9.66	24.85	710	710	.....	1,593	1,047	
70	5,040	4,900	140	7.68	20.00	750	750	.....	5,610	140	
62	1,465	665	800	12.55	29.96	100	100	.....	1,415	800	
67	960	360	600	16.59	29.86	1,250	1,250	.....	460	600	
63	900	310	590	13.87	33.36	240	240	.....	1,560	590	
64	1,410	690	720	6.02	15.06	240	240	.....	690	720	
61	1,120	620	500	10.45	26.92	.....	.....	20	840	520	
65	1,480	1,180	300	3.88	19.92	.....	.....	.....	1,180	300	
Av.	3,932	2,934	998	9.65	34.34	1,796	1,744	52	4,678	1,050	

<sup>1</sup>This does not include national forest or public domain for which no definite averages are available.



Hay land was valued from \$15 to \$85 per acre with an average of \$34.34. The small area of hay land leased cost \$1.57 per acre or 4.6 percent of the estimated value of all hay land. Some of the reasons for wide variation in values per acre are location, improvements, assessed valuation and personal opinion.

These comparisons indicate some discrepancies between values at which land is held and prices paid to lease land. It is doubtful whether range cattle can pay the carrying charges on \$10 per acre pasture land, except in times of high beef prices; certainly not as long as pasture can be leased for from 10 to 25 cents per acre as shown by this study.

However, it would be a risky policy to depend entirely upon leased land for running cattle. Ownership of headquarters and water holes is vital to the stability of the cattle business. In fact the rules for the use of the national forest specifically recognize this need for ownership of headquarters by granting only temporary grazing permits to cattlemen who do not own wintering facilities.

Considered from this point of view, ranchmen are justified in placing a higher value per acre on their owned land than they could earn interest on if it were their only grazing land. For example the records analyzed in the following tables show that there was an average of \$2,866 net return for the use of the total investment in the business. The investment in cattle, other livestock and equipment was \$41,944. Six percent of this is \$2,517, leaving \$349 as return on investment in land, or 8.9 cents per acre on the 3,932 acres owned. This is less than one percent on the estimated value per acre of grazing land, without considering the value of hay land or improvements. To earn six percent on the investment claimed would require a \$3,468 increase in the average income per ranch, or an advance of about \$1.25 per hundredweight on the average net returns from actual sales during this period. (306 head x 900 lbs., 275,400 lbs. sold)

**4. Investment in Ranches.**—The total investment on the 32 individual ranches ranged from about \$20,000 to over half a million. The average for all was slightly over \$100,000. Of this about one-half was land, about \$10,000 was for buildings and improvements. The investment in equipment ranged from less than \$1,000 to over \$5,000. The small ranches had a larger percentage of their total investment in equipment and in buildings.

The total investment per head of cattle for all ranches was \$131. On the largest ranch the investment was \$227 per head of cattle which was the heaviest of any ranch, due to owning all land. On only three ranches, 25, 43 and 66, was the investment less than \$100 per head of cattle. On these it was \$92, \$79 and \$86 respectively.



Rancher 43 leased two-thirds of his area, 25 leased 57 percent and 66 leased 49 percent of his area. In each case this was nearly twice as large a percentage leased as on the average ranch. The cattle investment per head averaged \$45 for all ranches. Table 5 gives the detail for each ranch.

**Indebtedness.**—Two ranches, 10 and 36, had no debts. Ten men had their land free of debt. Only four men had their cattle free of indebtedness. Several men were in debt for small amounts. Of the whole number ranch 64 was the only one whose obligations reduced his net worth below \$10,000. Debts of all kinds averaged \$40 per head of cattle. Cattle debts were \$18 per head. This is only 40 percent of the value per head at which cattle were inventoried. This is not as serious a situation as existed on the prairie ranches during the same period where cattle debts were 47 percent of the cattle inventory. Table 6 reveals the situation on all ranches.

**TABLE 5.—Distribution of Capital Invested in Ranching: Average for Period Studied.**

Ranch No.	Total investment	Value of land	Value improvements	Value equipment	Range cattle	Other live-stock	Total debt	Net worth
50	\$593,194	\$438,862	\$31,778	\$5,389	\$115,187	\$ 1,978	\$ 34,578	\$ 558,616
25	237,941	82,812	24,048	3,488	123,363	4,239	125,817	112,124
19	168,745	75,793	12,055	1,697	74,915	4,255	115,965	52,780
26	245,290	144,506	17,249	1,883	79,977	1,675	140,528	104,762
48	133,842	71,623	10,858	1,804	46,382	3,175	68,666	65,176
10	150,961	80,855	17,951	3,157	47,199	1,799	.....	150,961
23	124,481	44,404	24,622	1,225	51,286	2,944	33,576	90,905
38	113,374	44,884	6,330	1,522	44,417	16,221	24,101	89,273
14	114,084	56,893	11,233	3,114	40,914	1,930	15,565	98,519
43	57,026	17,667	9,991	2,427	25,071	1,870	13,170	43,856
1	95,998	52,759	6,545	1,418	32,623	2,653	46,481	49,517
15	99,861	63,142	6,028	2,723	26,890	1,078	36,859	63,002
69	77,268	35,603	7,734	3,718	27,988	2,225	48,059	29,209
68	66,844	29,492	5,853	2,861	26,706	1,932	2,031	64,813
53	75,342	33,776	8,929	2,870	28,211	1,556	16,318	59,024
36	82,997	47,901	6,535	3,566	23,858	1,137	.....	82,997
7	87,055	45,279	7,992	3,259	26,900	3,625	27,100	59,955
3	80,666	37,688	3,989	1,972	25,604	11,413	21,045	59,621
40	66,705	34,201	7,535	1,754	21,015	2,200	37,874	28,831
2	50,064	16,500	7,351	1,457	23,096	1,660	19,294	30,770
35	67,493	34,225	7,612	3,058	21,338	1,260	569	66,924
16	59,958	32,204	6,697	2,780	16,632	1,645	1,082	58,876
66	37,704	9,808	4,986	1,608	20,272	1,030	18,310	19,394
34	43,114	15,189	5,157	1,834	18,375	2,559	19,032	24,082
47	52,747	16,747	3,933	1,770	15,615	14,682	11,159	41,588
70	55,995	34,283	6,037	1,430	13,805	440	6,000	49,995
62	47,956	24,978	7,336	1,347	12,860	1,435	16,572	31,384
67	41,147	18,340	5,544	758	15,285	1,220	27,057	14,090
63	39,510	18,746	5,236	1,128	13,880	520	22,550	16,960
64	29,106	9,193	5,808	1,835	10,885	1,385	22,879	6,227
61	29,882	13,222	6,720	993	8,072	875	4,325	25,557
65	20,361	6,635	3,922	1,033	7,676	1,095	5,192	15,169
Av.	104,567	52,715	9,908	2,259	36,284	3,401	32,446	72,121

**Ranch Receipts.**—Cattle sales were the chief source of income on all ranches except No. 47. This ranch secured two-thirds of its income from sheep. Two other ranchers had some sheep. Ranch



**TABLE 6.—Distribution of Ranch Indebtedness: Average for Period Studied.**

Ranch No.	Total Indebtedness	Land debt	Cattle debt
50	\$ 34,578	\$.....	\$34,578
25	125,817	28,500	97,317
19	115,965	33,333	82,632
26	140,528	140,528	.....
48	68,666	33,167	35,499
10	.....	.....	.....
23	33,576	27,750	5,826
38	24,101	7,552	16,549 <sup>1</sup>
14	15,565	12,646	2,919
43	13,170	2,000	11,170
1	46,481	26,861	19,620
15	36,859	20,571	16,288
69	48,059	31,400	16,659
68	2,031	.....	2,031
53	16,318	15,000	1,318
36	.....	.....	.....
7	27,100	27,100	.....
3	21,045	12,809	8,236
40	37,874	19,643	18,231
2	19,294	9,449	9,845
35	569	.....	569
16	1,082	.....	1,082
66	18,310	12,598	5,712
34	19,032	11,105	7,927 <sup>2</sup>
47	11,159	.....	11,159 <sup>3</sup>
70	6,000	.....	6,000
62	16,572	13,300	3,272
67	27,057	.....	27,057
63	22,550	18,200	4,350
64	22,879	12,129	10,750
61	4,325	.....	4,325
65	5,192	1,500	3,692
Av.	32,446	18,033	14,413 <sup>4</sup>

<sup>1</sup> Includes \$3297.00 on sheep.

<sup>2</sup> Includes 546.00 on sheep.

<sup>3</sup> Includes 3324.00 on sheep.

<sup>4</sup> Includes 693.00 on sheep.

38, however, was the only other ranch where sheep receipts were very important. Five ranches sold over \$700 worth of crops. There was very little non-cash income. Only eight ranches showed any increase in cattle investment during the study while the average for all ranches shows a decrease in cattle inventory rather than an increase.

The source of receipts as given in table 7 may be taken as fairly representative of the situation in the mountain sections of Colorado during the years 1922 to 1925. Some cattle men were finding other sources of income to supplement the reduced receipts from cattle; others were "taking their medicine" and waiting for better days.

**Ranch Expenses.**—Table 8 analyzes the expenses for each ranch. The largest items of cash expenditure were labor, purchase of cattle, taxes and feed. Of the \$10,781 total expense shown for all ranches the items of depreciation and decreased inventory are not out of pocket cash expenses; however, they represent charges that must be met ultimately to keep the business as a going concern. Three men



did not pay any national forest grazing fees during the period of this study. The total expenses for all ranches were about \$13.50 per head of cattle of which \$12 was actual cash expense.

TABLE 7.—Source of Ranch Receipts: Average for Period Studied.

Ranch No.	Total receipts	Cash receipts				Receipts from increased inventory		
		Cattle	Other stock	Stock products	Crops	Miscellaneous	Cattle	Other stock and feed
50	\$53,606	\$31,322	\$.....	\$.....	\$ 900	\$.....	\$20,153	\$1,231
25	39,515	39,173	19	.....	323	.....	.....	.....
19	38,189	37,418	75	65	215	26	.....	390
26	31,532	31,377	.....	24	109	22	.....	.....
48	16,257	13,387	707	1,203	960	.....	.....	.....
10	17,581	14,980	.....	6	440	430	810	915
23	17,293	16,512	171	.....	42	23	158	387
38	19,737	10,082	5,912	3,743	.....	.....	.....	.....
14	14,489	12,892	.....	20	97	10	1,462	8
43	8,294	7,013	38	42	960	.....	.....	241
1	12,865	11,660	120	2	1,083	.....	.....	.....
15	13,543	13,402	.....	.....	.....	.....	.....	141
69	12,226	10,264	.....	.....	1,900	.....	.....	62
68	14,068	9,901	62	22	188	.....	3,895	.....
53	8,909	8,892	.....	17	.....	.....	.....	.....
36	12,623	12,399	4	6	106	108	.....	.....
7	10,997	10,775	.....	.....	.....	.....	.....	222
3	16,403	11,266	1,228	.....	.....	.....	1,138	2,771
40	8,386	8,224	.....	162	.....	.....	.....	.....
2	8,322	8,068	49	169	.....	.....	.....	36
35	10,690	10,415	.....	.....	55	.....	.....	229
16	7,023	6,717	71	.....	12	5	.....	218
66	7,375	7,128	.....	.....	.....	.....	.....	247
34	8,298	5,774	922	268	.....	30	.....	1,304
47	14,976	4,712	6,047	4,050	167	.....	.....	.....
70	5,230	5,213	.....	.....	.....	.....	.....	17
62	5,901	5,016	.....	.....	.....	.....	885	.....
67	7,116	6,469	.....	351	250	.....	.....	46
63	6,585	6,585	.....	.....	.....	.....	.....	.....
64	4,663	3,693	152	306	67	.....	440	5
61	2,590	2,164	.....	62	364	.....	.....	.....
65	3,894	3,842	28	24	.....	.....	.....	.....
Av.	14,244	12,763	585	371	245	27	1	253

<sup>1</sup> Average for all ranches shows a decrease.

Taxes composed the largest single item of expense other than labor. On ranch 70 the taxes constituted practically 25 percent of the total expenses and on several other ranches they amounted to over 15 percent of the total expense, altho they were only 10.1 percent of the total expense on all ranches. Ranch 50 with no leased land had the heaviest tax bill in point of actual dollars, amounting to over \$6,000, but small relative to the total area. The taxes for all ranches averaged about 28 cents per acre of land operated. It was impractical to separate land from personal taxes, but if only one-half of the total taxes were on real estate they would still amount to 18.6 cents per acre or almost exactly what grazing land leased for (18 cents) on the average.



TABLE 8.—Distribution of Ranch Expenses: Average for Period Studied.

Ranch No.	Total expense	Feed and salt	Leases	Forest fees	Taxes	Paid Labor	Repairs	Auto and misc.	Livestock purchased			Depreciation			Decrease inventory
									Cattle	Other stock	equip. bldgs.	Cattle	Other stock		
50	\$39,421	\$ 247	\$ 2,634	\$ .....	\$6,015	\$15,275	\$ 182	\$1,479	\$15,060	\$ .....	\$1,163	\$ .....	\$ .....	\$ .....	
25	27,424	3,023	1,891	375	1,891	12,217	389	913	1,615	.....	1,254	3,026	.....	87	
19	36,159	3,323	682	380	1,863	8,292	210	653	13,515	.....	749	6,492	.....	375	
26	31,507	2,655	772	151	3,998	13,961	1,452	1,047	3,301	.....	808	3,007	.....	137	
48	14,472	1,552	966	545	1,535	3,951	461	1,212	417	.....	723	2,993	.....	.....	
10	17,843	648	336	153	1,849	8,997	587	1,839	1,931	.....	839	.....	.....	.....	
23	13,965	2,464	739	68	1,369	6,199	471	486	806	.....	587	.....	.....	.....	
38	12,797	1,719	20	485	690	6,114	604	1,181	486	.....	195	.....	.....	7	
14	11,110	878	482	317	827	5,114	485	394	1,692	.....	921	.....	.....	.....	
43	5,746	380	645	182	706	1,890	258	297	350	.....	685	353	.....	.....	
1	7,742	1,773	59	103	824	3,397	159	277	377	.....	398	1,956	.....	19	
15	9,888	625	479	151	1,259	2,266	337	733	2,381	.....	792	828	.....	.....	
69	7,251	372	418	100	535	1,366	143	392	545	.....	21	2,665	.....	.....	
68	8,106	150	16	491	645	2,202	336	343	3,166	.....	92	582	.....	83	
53	7,767	1,148	119	286	700	3,145	312	437	586	.....	50	778	.....	43	
36	11,464	580	396	329	892	2,981	738	697	1,548	.....	151	1,101	.....	181	
7	8,345	166	183	86	688	3,139	602	192	156	.....	38	815	.....	.....	
3	10,276	2,681	391	15	713	1,954	217	352	2,636	.....	769	548	.....	.....	
40	8,116	160	111	110	561	1,478	135	215	4,429	.....	397	370	.....	150	
2	6,429	913	421	110	480	1,974	383	291	491	.....	25	538	.....	.....	
35	6,897	89	772	272	1,101	2,198	527	489	575	.....	.....	856	.....	.....	
16	5,898	121	26	215	936	1,614	214	503	281	.....	.....	644	.....	.....	
66	3,734	637	96	126	294	1,298	68	275	68	.....	.....	239	.....	.....	
34	5,794	251	14	171	518	1,508	300	253	280	.....	1,464	472	.....	.....	
47	9,094	615	365	147	503	3,496	263	483	363	.....	202	1,892	.....	342	
70	1,507	61	77	75	375	70	82	186	185	.....	.....	386	.....	.....	
62	2,637	54	300	.....	356	1,238	168	139	.....	.....	.....	338	.....	.....	
67	4,429	28	43	60	284	547	34	139	1,105	.....	.....	304	.....	44	
63	4,406	143	218	.....	340	947	98	356	102	.....	.....	384	.....	.....	
64	2,304	314	.....	50	315	698	170	227	112	.....	.....	418	.....	.....	
61	2,158	25	75	25	227	770	50	175	88	.....	.....	291	.....	60	
65	3,345	441	.....	23	141	434	132	142	267	.....	.....	223	.....	.....	
Av.	10,781	973	419	190	1,091	4,187	376	576	1,655	178	666	470	.....	1	
Percentage of total	9.0	3.9	3.9	1.8	10.1	38.8	3.5	5.3	15.3	1.7	6.2	4.4	.....	.....	

1 Average for all ranches shows an increase.



TABLE 9.—Ranch Income and Percentage on Investment: Average for Period Studied.

Ranch No.	Total receipts	Total expenses	Receipts minus expenses	Unpaid labor	Return for investment	Paid interest	Return for owner's equity	Percent on owner's equity	Percent on total investment
50	\$53,006	\$39,421	\$14,185	\$.....	\$14,185	\$2,671	\$11,514	2.06	2.89
25	29,515	27,424	12,091	600	11,491	9,890	1,601	1.43	4.83
19	38,189	36,159	2,030	300	1,730	9,110	-7,380	-13.98	1.03
20	31,532	31,907	25	281	-266	5,432	-8,688	-8.29	-0.10
48	16,257	14,472	1,785	900	885	5,017	-4,132	-6.34	0.66
10	17,581	17,845	262	.....	-262	.....	.....	-0.17	-0.17
23	17,293	13,905	3,328	.....	3,328	2,374	954	1.05	2.67
38	19,737	12,797	6,940	600	6,340	1,942	4,398	4.93	5.59
14	14,489	11,110	3,379	.....	3,379	1,069	2,310	2.34	2.96
43	8,294	5,746	2,548	747	1,801	1,165	636	1.45	3.16
1	12,865	7,742	5,123	900	4,223	3,557	666	1.34	4.40
15	13,543	9,888	3,655	600	3,055	2,631	424	0.67	3.06
69	12,226	7,251	4,975	1,125	3,850	3,464	386	1.32	4.98
68	14,068	8,106	5,962	1,200	4,762	162	4,600	7.10	7.12
53	8,909	7,767	1,142	600	542	1,005	-463	-0.78	0.72
36	12,623	11,464	1,159	480	679	.....	679	.82	.82
7	10,997	8,345	2,652	600	2,052	1,814	238	0.40	2.35
2	18,403	10,276	6,127	1,004	5,123	1,468	3,655	6.13	6.35
40	8,386	8,116	270	540	-270	2,860	-3,130	-10.85	-0.40
2	8,329	6,429	1,893	600	1,293	1,358	-65	-0.21	2.58
35	10,699	6,897	3,802	960	2,842	46	2,796	4.14	4.14
16	7,023	5,838	1,185	630	535	73	452	0.77	0.88
66	7,735	5,734	2,041	600	1,441	1,244	1,797	9.27	8.07
34	8,298	5,734	2,504	600	1,904	1,154	750	3.11	4.42
47	14,076	9,094	5,882	600	5,282	910	4,372	10.51	10.01
70	5,230	1,507	3,723	1,240	2,483	420	2,063	4.13	4.43
62	5,901	2,637	3,264	900	2,364	1,308	1,056	3.86	4.93
67	7,116	4,429	2,687	720	1,967	1,774	193	1.37	4.78
63	6,585	4,406	2,179	675	1,504	1,619	-115	-0.68	3.81
64	4,663	2,304	2,359	1,151	1,208	1,569	-361	-5.81	4.15
61	2,590	525	432	.....	-432	339	-432	-1.69	-0.31
65	3,894	3,345	549	900	-351	415	-706	-5.05	-1.72
Ave.	14,244	10,781	3,463	597	2,866	2,322	544	0.75	2.74



**Ranch Income.**—The total receipts and expenses which are shown in detail in the two previous tables have been brought forward in Table 9 to show the financial situation for the ranch as a whole. Ranch 10 was the only one where expenses exceeded the receipts.

The average excess of receipts above expenses was \$3,463. Subtracting the value of unpaid labor, \$597, left \$2,866 return on investment, or 2.74 percent. Interest paid amounted to \$2,322, leaving only \$544 return on the owner's equity or 0.75 percent.

While a rancher with a large investment could live quite comfortably on a return of 2.74 percent if he were out of debt, yet with interest rates 8 to 12 percent, such a return on the entire ranch would be required simply to pay interest on debts on only one-third of the total investment.

Four men failed to earn anything on their whole investment. Eleven men failed to earn anything on their equity, due to heavy interest payments that they had to make.

**Net Cash Income.**—Taking the receipts and expenses shown in the previous tables that were cash and including the actual payments of interest, gives the net cash available for the rancher and his family

**TABLE 10.—Net Available Cash: Average for Period Studied.**

Ranch No.	Cash receipts	Cash expense excluding interest	Paid interest	Total cash expense	Net cash to live on
50	\$32,222	\$38,258	\$2,671	\$40,929	-\$8,707
25	39,515	23,057	9,890	32,947	6,568
19	37,799	28,918	9,110	38,028	-229
26	31,532	27,317	8,432	35,749	-4,217
48	16,257	10,619	5,017	15,636	621
10	15,856	17,004	-	17,004	-1,148
23	16,748	13,129	2,374	15,503	1,245
38	15,449	11,494	1,942	13,436	2,013
34	13,019	10,189	1,069	11,258	1,761
43	13,770	4,708	1,165	5,873	7,897
1	12,865	5,369	3,557	8,926	3,939
15	13,402	8,268	2,631	10,899	2,503
69	12,164	3,892	3,464	7,356	4,808
68	10,173	7,441	162	7,603	2,570
53	8,909	6,783	1,005	7,788	1,121
36	12,623	8,252	-	8,252	4,371
7	10,775	5,250	1,814	7,064	3,711
3	12,494	9,728	1,468	11,196	1,298
40	8,386	7,198	2,860	10,058	-1,672
2	8,286	5,088	1,358	6,446	1,840
35	10,470	6,023	46	6,069	4,401
16	6,805	3,910	73	3,983	2,822
66	7,128	2,862	1,244	4,106	3,022
34	6,994	4,739	1,154	5,893	1,101
47	14,976	6,436	910	7,346	7,630
70	5,213	1,111	420	1,531	3,682
62	5,016	2,255	1,308	3,563	1,453
67	7,070	2,241	1,774	4,015	3,055
63	6,585	2,204	1,619	3,823	2,762
64	4,218	1,886	1,569	3,455	763
61	2,590	1,435	339	1,774	816
65	3,894	1,580	415	1,995	1,899
Av.	13,991	9,645	2,322	11,967	2,024



to live on during the year as shown in Table 10. For all ranches this amounts to \$2,024 or about \$168 per month. Five men had no cash available to live on while of the others only three had less than \$1,000. This shows a far more healthy financial condition than existed upon the prairie ranches where the average for all ranches showed only \$136 per year net available cash.

There was considerable variation in incomes on the individual ranches as shown by Table 11. Nineteen hundred twenty-two was the poorest year for all ranches, altho only two failed to earn any return on their investment. Ranch 35 made 7 percent on investment in 1922 which was the best record for the year. Three men made over 7 percent in 1923 and five failed to earn anything. In 1924, two men made over 7 percent and six lost. In 1925, five men made over 7 percent and only two lost. Ranch 47 was consistently the most profitable. Ranch 10 was most consistently in the red. There were only two ranches included in this study that were forced out of the cattle business due to excessive debts and low cattle prices.

TABLE 11.—Percentage Return on Total Investment by Years.

Ranch No.	1922	1923	1924	1925	Average per ranch
50	.....	1.29	3.31	.....	2.39
25	.....	0.93	6.11	5.91	4.83
19	3.36	-1.21	.....	.....	1.03
26	.70	1.46	-2.53	-0.05	-.10
48	.....	2.57	-1.49	-0.95	0.66
10	-2.40	-0.51	-0.07	2.18	-0.17
23	3.40	2.47	2.80	2.01	2.67
38	2.19	7.66	7.92	4.52	5.59
14	0.14	3.02	3.66	5.00	2.96
43	.....	3.50	2.75	3.21	3.16
1	5.22	1.40	4.63	6.58	4.40
15	2.06	3.31	2.53	4.31	3.06
69	.....	.....	3.50	6.48	4.98
68	.....	.....	6.51	7.67	7.12
53	-0.57	-0.40	0.32	3.48	0.72
36	1.28	0.31	1.16	.50	0.82
7	3.46	1.17	.....	.....	2.35
3	2.09	7.51	6.22	8.71	6.35
40	3.15	-3.75	.....	.....	-0.40
2	3.57	3.01	0.57	2.96	2.58
35	7.01	1.47	.....	.....	4.14
16	0.10	-0.10	-0.18	4.32	0.88
66	.....	.....	6.68	9.33	8.07
34	2.60	1.03	2.42	11.04	4.42
47	.....	8.34	15.16	6.57	10.01
70	.....	.....	.....	4.43	4.43
62	.....	.....	6.00	3.85	4.93
67	.....	.....	0.09	9.81	4.78
63	.....	.....	1.44	6.26	3.81
64	.....	.....	1.95	6.26	4.15
61	.....	.....	-0.94	0.34	-0.31
65	.....	.....	-5.68	2.50	-1.72
Av.	1.79	2.17	2.82	4.17	2.74

**Ranch Expense Per Head of Cattle.**—The ranch expenses given previously in Table 8 have been adjusted to secure a net ranch ex-



pense chargeable to the cattle business for each year, together with an average for all years. Death loss and depreciation on the breeding herd are shown separately for this class of cattle as it constitutes part of the necessary replacement cost of ranching.

Table 12 gives the resulting ranch expenses per head of cattle except calves. The average ranch expense other than interest is \$10.32 on all cattle except the breeding herd where the additional depreciation in their value increases their expense to \$14.34 per head. When interest paid and 6 percent on owner's equity are included, these charges are increased to \$18.58 and \$22.60 respectively. That is, to run a steer on these ranches for a year and pay 6 percent interest on the investment would involve ranch expenses of \$18.58. To run a cow in the breeding herd would raise this expense to \$22.60. With an average calf crop of 64 percent this would mean a cost of \$35.31 per calf.

TABLE 12.—Ranch Expense per Head Except Calves.

	1922	1923	1924	1925	Average
Net ranch expense other than death loss and depreciation of cattle					
Without interest .....	\$11.67	\$10.01	\$ 9.56	\$10.33	\$10.32
With interest .....	19.48	18.67	18.22	18.09	18.58
Breeding-herd death loss and depreciation per head .....	4.08	4.13	4.17	3.66	4.02
Total breeding-herd ranch expense per head					
Without interest .....	15.75	14.14	13.73	13.99	14.34
With interest .....	23.56	22.80	22.39	21.75	22.60

#### Ranch Expense Per One Hundred Pounds of Beef Produced.—

Table 13 shows the expenses per head given in Table 12 changed to a comparable rate per 100 pounds of live weight for the different classes of cattle. The gains per year for the different classes of cattle were surprisingly consistent. With satisfactory feed conditions, a growing steer or heifer put on from 200 to 250 pounds in a year regardless of age within the limits of age at which these cattle were sold. Aged steers gained 201 pounds per year which is double the gain that aged steers made on the plains.

With these uniform gains, little variation should be expected in the charge per 100 pounds of gain which is secured by dividing the ranch expense per head by the pounds gain per head.

The pounds gain shown per head for the breeding herd represent the estimated weight of calves produced, divided by the number of head of cows and bulls in the breeding herd. It costs slightly more under these conditions to secure 100 pounds of calf growth than to put 100 pounds gain on the older growing stock. This production per head in the breeding herd is based on the average calf crop which is 64 percent for all years. With a calf crop of 73 percent the



TABLE 13.—Net Ranch Expense per 100 Pounds of Beef Produced

Class of cattle	Pounds of beef produced per head by classes					Cost per hundredweight including interest					Cost per hundredweight not including interest				
	1922	1923	1924	1925	Av.	1922	1923	1924	1925	Av.	1922	1923	1924	1925	Av.
Heifers, 1's .....	237	230	218	222	226	8.22	8.12	8.36	8.15	8.22	4.92	4.35	4.38	4.65	4.56
Steers, 1's .....	254	239	249	271	252	7.67	7.81	7.32	6.68	7.37	4.59	4.19	3.84	3.81	4.10
Heifers, 2's .....	206	187	204	209	201	9.46	9.98	8.93	8.65	9.24	5.67	5.35	4.69	4.94	5.13
Steers, 2's .....	253	250	220	249	245	7.70	7.47	8.28	7.27	7.58	4.61	4.00	4.35	4.15	4.21
Aged Steers .....	210	166	183	238	201	9.28	11.25	9.96	7.00	9.24	5.56	6.03	5.22	4.34	5.13
Calf production per head in the breeding herd .....	243	242	252	254	248	8.02	7.71	7.23	7.12	7.49	4.80	4.14	3.79	4.07	4.16
Death loss and depreciation on breeding herd .....						1.68	1.71	1.65	1.44	1.62	1.68	1.71	1.65	1.44	1.62
Total calf expense .....						9.70	9.42	8.88	8.56	9.11	6.48	5.85	5.44	5.51	5.78

1 See Table 22 for average sale weights of calves.



ranch expense per hundredweight for the calves would be practically the same as for the growing herd. Calves 9 months of age weigh from 350 to 400 pounds while yearling and two-year-old cattle gain only 200 to 250 pounds per year.

The ranch expenses other than interest vary from \$4 to \$5 per 100 pounds for all classes except calves. With interest included, this is increased to from \$7 to \$9.

The significant point brought out by this study is the fact that when ranchmen are situated where they have sufficient pasture there should be no haste in hurrying young cattle to market. Forest grazing fees are charged per head. If a two-year-old or a three-year-old gains as much per year as a yearling, he has justified keeping him on in the herd. Market prices and demand for steers of different weights are the important factors. If younger cattle fatten to better advantage in feedlots, then ranchmen should demand better prices for young feeder cattle. With prices the same, older steers should be sold from mountain ranches.

Under these conditions it would be economy to keep steers at least until they were three years old or even older, provided they can continue to show yearly gains of around 200 pounds and there is no price discrimination on the market against heavy steers.

These conclusions differ from the ones based on a study of the prairie ranches where aged steers were shown to be unprofitable.

The reasons for this difference are not well understood. They may be feed, climate, better adapted to growth in the mountains, drouth and short supply of summer feed on the plains, quality of



Figure 4.—Cattle on private land prior to the opening of the national forest.



cattle, or what not. If the situation disclosed by this study is normal, it deserves more careful investigation in order to arrive at the real reasons.

### RANCH MANAGEMENT

1. **Summer Grazing.**—Since the days of the open range it has been more and more difficult to supply suitable summer grazing for cattle. The comparatively small and scattered tracts of the public domain have been so consistently overgrazed that very little value remains and little or no dependence can be placed on it by the cattlemen. This leaves two other sources of grazing, namely, the national forests and fenced pastures to carry the cattle thru spring, summer and fall in the northern portion of the Colorado mountain sections. In the southern sections some winter grazing must be furnished as well.

Grazing on the national forests is of primary importance on most mountain ranches in Colorado. This dependency is so complete in many cases that were the ranchmen deprived of their grazing permits it would mean virtual confiscation or destruction of their business. The recognition of preferences and long-time permits tends to add security to the use of the national forests.

Forty-five percent of the cattle in this study were summered on the national forests. The balance were run on the public domain and in fenced pastures. Leased state land and deeded land make up the fenced pastures. These pastures must, however, be relied on to carry the livestock for a period of from one to two months in the spring and early summer prior to turning the cattle on the forests, which averages about July 1 for the North Park ranches, May 15 for the San Luis and Gunnison valleys and June 1 for the foothills.

Fenced pastures are considered better than national forests for breeding stock on account of better calf crops secured and smaller death loss, but on the other hand, the cost of carrying is greater. The greater investment, or high lease costs of necessary improvements and upkeep thereof, with the usual higher taxes, makes the use of such pasture for summer grazing more or less impractical in most cases.

It seems as tho the national forests provide the most satisfactory summer grazing for the ranches that are located close enough so that cattle can be driven on or turned on. Some cattlemen are located so far from their allotment that they have to ship cattle by rail from the ranch to the range or at least within driving distance. This makes it very expensive, as is also a long drive of 50 to 100 miles thru farming communities, requiring much more help and the leasing of fields and buying feed for overnight stopping. Long drives





Figure 5.—Feeding hay in early spring before pasture has started.

are also hard on cattle, not only on account of loss in weight, but also for the reason that when cattle arrive on the national forest after a long drive, being very hungry they are more apt to get filled up on poisonous weeds.

The ideal arrangement seems to be where the ranch adjoins the forest allotment so that the stock can be allowed to drift gradually back to the higher ground.

The eight men in this study who ran their breeding herds in fenced pastures and did not use the national forest at all, or to a very small extent, made about 1 percent less interest on investment than did the other twenty-four ranchmen who used the national forests more extensively.

The non-users made a much better showing as to percentage calf crop and labor requirements, or number of cattle handled per man, but the higher investment in land and improvements and the upkeep expense together with greater expense for leases and taxes evidently more than offset these advantages.

**2. Spring and Fall Grazing.**—One of the greatest difficulties confronting the cattlemen of the North Park district is to provide good spring grazing to bridge the gap between winter hay feeding and the date when cattle are allowed to go on the forest allotment which averages about July 1. The cattle remain on the forest ranges an average of 113 days which calls for additional grazing land in the fall. The hay meadows cannot be pastured too late in the spring, for doing so would injure the hay crop. This problem is not so serious in the San Luis Valley and the foothill regions



as in those sections cattle are allowed to go on the forests at an earlier date, averaging around May 15, and remain on for an average of 177 days or almost 6 months.

The public domain in the North Park area is all but worthless due to overgrazing. This land should, in the opinion of many of the best cattlemen, be subject to some control whether it be federal, as is the case with national forests, or state, or controlled and regulated thru grazing associations, but obviously something must be done as the grazing on the public domain at present does no one much good.

In the early days of the North Park cattle industry the public domain or vacant government land was covered with bunch grass that grew to a good height and furnished excellent winter grazing. Cattle came thru the winters in better shape on this bunch grass with little or no hay than they do at the present time when one and one-half to two tons of hay are fed per cow. This original bunch grass must also have made good spring and early summer grazing as cattlemen in the early days were able to round up and ship their beef in July, whereas now no beef can be gathered and shipped until late fall with the exception of small bunches that can be kept in special pastures from the time hay feeding stops.

It is thought that by proper control and protection the public domain could be restored to its original grazing value and be of greater benefit to the cattle industry than ever before.

Fall grazing is furnished in nearly all cases in North Park and the foothills by hay meadows and fenced fields on the ranches proper. These meadows usually provide an abundance of feed from the time the hay is put up and the stacks fenced, till snow flies. Many North Park men have more fall grazing than their cattle can use.

This is not true in the San Luis Valley and foothill regions, however, where the snowfall is much smaller and the fall grazing extends thruout the winter months.

Owing to the fact that most Colorado mountain ranches use the national forests or public domain or both for grazing, it is difficult if not impossible to arrive at any definite figure as to the number of acres of grazing land required per head. Nothing but a mere approximation could be made on this point.

It is of interest here to note the basis used by the national Forest Service in determining the carrying capacity of the range. In the Colorado national forest in north central Colorado there are 742,553 acres listed as usable range. The carrying capacity for this forest was reported in 1927 as 20,586 head of cattle for an average of 4.7 months and 21,775 head of sheep for an average of 2.6 months.

On an animal-month basis the ratio between sheep and cattle ordinarily used by the Forest Service is approximately 3 to 1. Using



this ratio, the figure in cow months, with sheep in terms of cattle is equivalent of 116,880 cattle for one month. This means approximately 6 acres of usable range per head of cattle per month. It should be noted that this large area per head is due to presence of timber and rocks on the area grazed.

To obtain close estimates for single units of range the Forest Service often makes range surveys by which all areas are mapped and classified as to occurrence and type of the forage. By this means the number of "forage acres" in any range unit is secured, a forage acre being an acre of land completely covered with grazable plants.

In parts of the Colorado National Forest their surveys recommend 16 acres of effective forage type or approximately 25 actual acres per head of cattle for the normal summer season. This is on range where about 70 percent of the ground cover is forage. United States Department of Agriculture Bulletin 790, page 29, considers 2 to 2.5 acres of range per cow per month as usually sufficient.

When we consider the wide variation in type of vegetation and rainfall and other factors it is obvious that grazing must be based on a study of local conditions rather than any set rules.

However, since the amount of hay or winter feed available largely determines the number of cattle that may be carried from year to year, the rate of stocking may be stated in terms of acres of hay and crop land per head of cattle.

The figures made available by this study show that for the 32 ranches there was an average of one and one-third acres of hay and crop land per head. (Average number of head not counting sucking calves.) The North Park ranches had one and three-fifths acres, San Luis Valley and Gunnison ranches had one and one-fourth acres, and the foothill ranches one-half acre per head.

It might seem from the above that the last-named group was overstocked or that the first group was understocked. A further scrutiny of the data seems to indicate that the reverse was true. Of all the hay fed on the North Park ranches, 12 percent was purchased and they sold 2 percent of the hay raised. All grain used by this group was purchased and none raised.

The San Luis Valley and Gunnison group purchased only 5 percent of the hay used and sold 3 percent of the hay raised. About three-fourths of the grain used was purchased while about one-third of the grain raised was sold.

The foothill ranches purchased 5 percent of the hay and roughage used and sold none. They purchased 17 percent of the grain used and sold 8 percent of the grain raised.



Assuming now that the carrying capacity of a Colorado mountain ranch is equal to the number of head of livestock that can be wintered on home-grown hay and other roughage, it appears that the North Park ranches were about 10 percent overstocked during the period of this study while the other two groups were stocked at nearly the normal capacity.

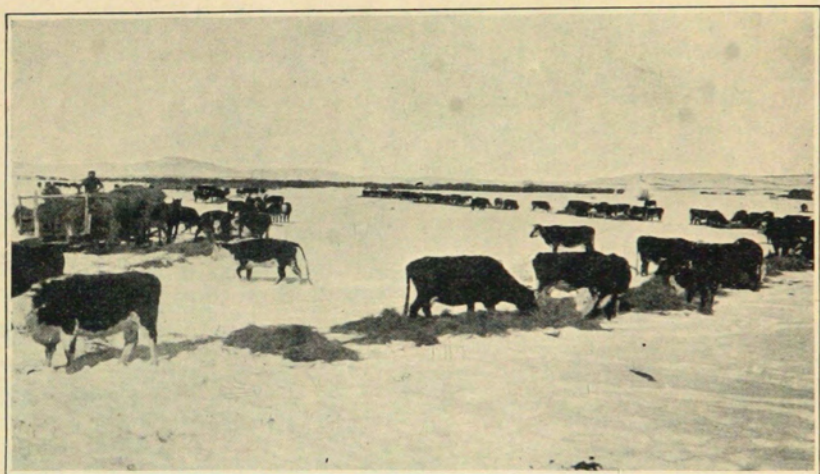


Figure 6.—Winter feeding without any protection from the wind.

3. **Wintering Cattle.**—Two distinct systems of wintering cattle are found on Colorado mountain ranches. The one is strictly hand feeding, chiefly native hay with no grazing, which is the one in use on North Park ranches, and other parts of the state where ranches are located at an equal or higher altitude. The snow cover remains, as a rule, all winter, and the hay is hauled from the stacks to the feeding ground on sleighs. Under the other system of wintering, the cattle are grazed more or less all winter and this grazing is supplemented with greatly varying amounts of home-grown feeds consisting for the main part of native hay, and in some instances, alfalfa and other roughage. This is the system followed in the San Luis Valley and eastern-slope foothills and is subject to a great many variations, depending on the severity of seasonal storms and the abundance of feed on hand. Severe storms do occur in these districts to cover the grazing feed but usually not for long periods.

When total ranch area is considered it is found that the North Park ranches had about 6 acres per head; the San Luis Valley and Gunnison group, 9 acres; and the foothill ranches, 12 acres per head. This furnished sufficient winter grazing for the foothill





Figure 7.—Wherever possible the shelter of timber should be used for winter feeding.

ranches without procuring "outside grass." In the San Luis Valley, however, many ranchmen find it necessary to obtain winter grazing outside of the ranch, paying sometimes by the head per month and sometimes buying the grass or feed on a certain field or tract for a lump sum. This usually means a heavy expense not only for the feed itself but also for moving cattle to and from the grazing and often maintaining a camp and a herder or two away from the home ranch. In most instances where hay is purchased the privilege of grazing the meadows where the hay is located until the hay is fed up is included in the purchase price.

The average amounts of hay and grain used per year during this study are shown in Table 14 in pounds per head and by classes of cattle. Most of the hay used is wild hay. Small amounts of alfalfa and silage were reported from San Luis Valley and from foothill ranches.

Some grain and other concentrates such as cottonseed cake were fed by all groups. But only one man fed grain to breeding cows and that only one winter and a small amount. Eight men fed grain to bulls, one in the foothill group, four in the San Luis Valley and three in the North Park area.

The grain fed to bulls varied from as low as 10 pounds to as high as 250 pounds per head on the individual ranches. Some ranchmen fed the grain as a part of the regular winter ration for a certain period before the breeding season to all the bulls, while others fol-



lowed the practice of cutting out the one or more bulls that seemed to need it the most and grained these by themselves.

The practice of graining the calves, i. e., short yearlings, seems to be gaining favor, especially in the North Park area. Six men out of the sixteen grained calves for the purpose of avoiding a set-back after weaning time. Feeding grain liberally to calves promotes development into growthy yearlings in any locality.

TABLE 14.—Amounts of Winter Feed by Classes, Pounds per Head.

Area	Class of cattle	1922		1923		1924		1925		Average	
		Rough- age	Con- cen- trates	Rough- age	Con- cen- trates	Rough- age	Con- cen- trates	Rough- age	Con- cen- trates	Rough- age	Con- cen- trates
North Park											
	Cows	3291	....	3549	....	3104	....	3128	....	3276	....
	Bulls	6376	59	6892	26	5969	37	5316	17	6144	34
	Yearlings	2307	4	2566	12	2241	15	2156	6	2297	9
	Two-year-olds	3314	13	3472	30	3136	7	3279	10	3312	16
	Aged steers	4236	....	4041	99	4456	42	2737	....	4173	16
San Luis Valley											
	Cows	2398	....	2271	....	1564	....	1814	....	1938	....
	Bulls	5119	30	4637	22	4097	3	4023	32	4374	19
	Yearlings	2265	....	2008	....	1802	....	1746	14	1910	4
	Two-year-olds	1530	7	2422	10	1518	....	1762	....	1848	5
	Aged steers	2000	....	3028	....	.....	....	.....	....	2804	....
Foot Hills											
	Cows	850	....	1405	21	1199	....	1128	....	1147	6
	Bulls	2187	....	3151	24	3375	....	2889	111	2902	36
	Yearlings	1818	86	1576	126	1238	107	1322	....	1428	66
	Two-year-olds	1604	117	1692	59	1388	204	968	....	1332	80
	Aged steers	1731	133	.....	....	.....	....	1212	....	1618	105

That this practice is profitable seems to be indicated by the figures obtained in this study. Out of a total of 5,804 yearling steers sold from the 32 ranches, 778 had received grain and cottonseed cake thru the first winter. The amount of grain averaged 93 pounds per calf and cost \$1.38 per head. When sold these 778 steers averaged 62 pounds more in weight and a net return of \$8.30 per head more than the average of all yearling steers sold.

The grain fed to two-year-old and aged steers was fed for a month or two just before marketing as a "warming up" ration. Only four men in this study followed this practice, two in North Park and one each in the San Luis Valley and the foothill regions.

The 1,207 two-year-old steers that were fed before sold from these four ranches during the period of this study, averaged only 27 pounds per head more in weight, but the net return was \$5.30 per head more than the average for all two-year-old steers sold. The 210 three-year-old steers so handled and sold averaged 16 pounds more weight and netted \$4.80 more per head than the average for the aged steers sold from all ranches. Apparently the better returns per head were due to better finish and less shrink on the fed cattle.

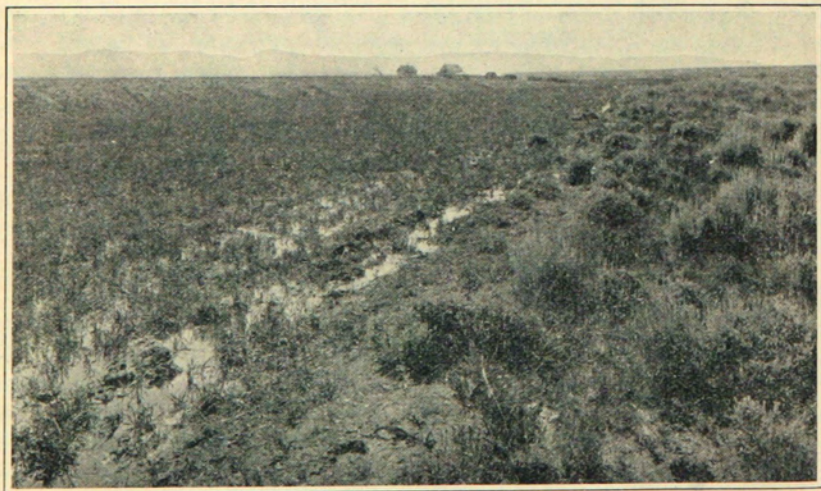


**4. Feed-Crop Production.**—It is seen from the foregoing that the feed-crop production is largely the determining factor in the expansion or contraction of a range-cattle enterprise. This is true only within certain limits, however. The summer range or pasture is of course equally important and a proper balance must be maintained for economical production.

There can be no doubt that the production of hay and other feed crops can be and is being increased on the mountain ranches in Colorado. This is being effected by improving new land on which it is practicable to put water and for which water is available, by improving and re-seeding meadows and by more efficient use of the water.

The real limiting factor in crop production is the water. Very little has been done to conserve and use water to the best advantage in some mountain sections of the state. Along the foothills of the eastern slope there is generally a shortage of water for irrigating the ranches located in the hills. The water has, as a rule, been appropriated and over-appropriated at an earlier date by farmers lower down on the various streams. Development of storage facilities would no doubt involve too great an expenditure to allow the water to be used for such crops as native hay and pasture for range cattle.

In the San Luis Valley also the water has been appropriated for growing cultivated crops and the hay and forage crops, other than alfalfa, cannot compete with these crops in the matter of returns per acre. It stands to reason that there will be a curtailment



**Figure 8.**—Reclaiming unprofitable sage brush in North Park by reseeded with tame grass. (See Colo. Bul. 332.)



of water for hay and forage-crop production in proportion to the expansion in the production of the cultivated money crops. Here, too, the land suitable for raising grain, potatoes and other cash crops exceeds the supply of water necessary to irrigate it.

In the North Park region, however, an entirely different condition exists. It is generally admitted by ranchmen of this district that there is too much water. Altho all the water is appropriated and used it cannot be said to be used with any degree of economy. The water is usually turned on the meadows about June 15 and allowed to flood the ground from that time on until about ten days before hay harvest starts, which is generally from July 25 to August 5.

In speaking of western ranchers who "cover their meadows with immense quantities of water which often stands for days. . ." John A. Wiltsoe in his book "Principles of Irrigation Practice," page 280, says, "The experiments at our service indicate that all hay crops are injured by an excess of water, and that the best yields are obtained only by moderate irrigations. The immoderate use of water on such ranches should be discontinued for it is an absolutely senseless practice. The hay-making grasses, whether tame or wild, should not be given too much water if large yields are desired."

While this statement may not apply directly to North Park ranches in all cases, it seems certain that lighter and frequent irrigations would improve the hay crop in most instances. The surplus water could well be used on other land such as pasture. The obvious reason that this has not been done is the considerable cost of the required improvements in the way of longer supply ditches and also greater expense of the actual application of the water itself.

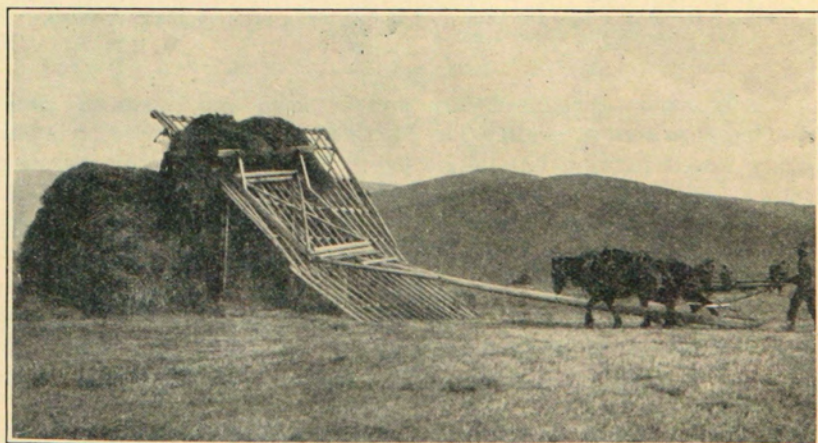


Figure 9.—Stacking hay in North Park.



With the growth of public interest in irrigated pastures in other sections of the state, it is a question whether it wouldn't be worth while to experiment with irrigated pastures in the mountain parks. The amount of irrigation water which is available could by proper use be spread over a much larger area. Seeding to tame pasture grasses and the development of rotated irrigated pastures, so that one could be pastured while another was receiving irrigation water, should result in a considerable increase in the available feed. This is especially needed in the higher altitudes where the pasture season is short at best. Irrigated pastures in the lower valleys would aid in providing spring and early summer grazing until the forage at higher elevations is ready for the stock.

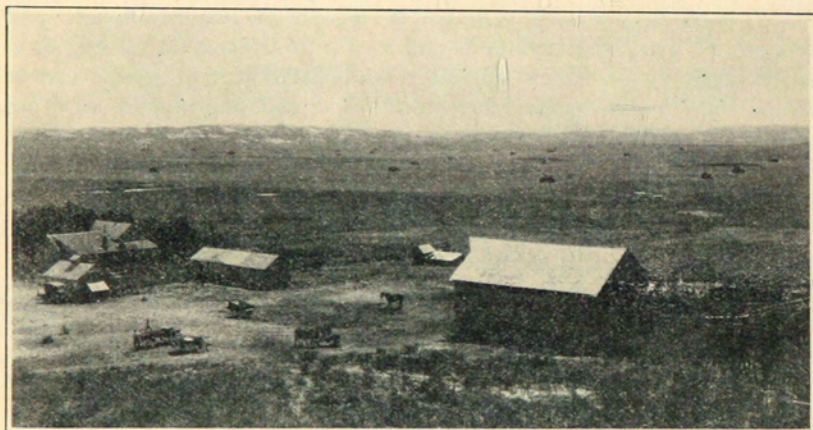


Figure 10.—Hay stacks scattered over the meadows are typical of the preparation for winter feeding.

All ranches produced hay and in some few instances other roughages as well as grain. The North Park ranches included in this study raised nothing but native hay. The short growing season is rather against other forage or feed grain crops. Both barley and oats can be grown in this area, however, and are grown quite successfully by some, altho on a rather small scale.

Most ranchmen in this area have attempted to improve their meadows by seeding them down with some tame grass such as timothy, redtop, or in some cases, alsike clover. The tame grasses do not seem to last very long however, presumably due to the excessive use of water.

In the San Luis Valley the reverse is probably true, there being more of a tendency for a shortage of water.



The net ranch cost of feeds grown, which included all items of expense properly chargeable to crops, such as labor, including operator's and family labor, repairs and depreciation on machinery, horse feed, taxes, land rent on leased hay land, irrigation-water charges and other miscellaneous expense, but no interest on investment, was as follows: Native hay in North Park, \$2.88 per ton; San Luis Valley and Gunnison, \$4.46; and foothills, \$5.95. Alfalfa in the San Luis Valley, \$4.98; foothills, \$6.94. Grain (oats and barley), San Luis Valley, \$1.12 per cwt; foothills, \$1.01 per cwt.

The relatively greater uncertainty of a crop in the foothills caused the higher cost for forage. The year 1925 was a poor crop year for the foothill ranches as it was also to some extent in the San Luis Valley. Also in the two last-named sections the water expense is much higher than on the North Park ranches.

5. **Breeding-Herd Management.**—In the management of the herd the most important phase to be considered is no doubt the percentage calf crop and the factors affecting it. These factors are many and varied and not all can be measured in a mathematical tabulation. Table 15 gives the percentage calf crop for each ranch for each year, together with averages.

TABLE 15.—Calf Crop per Ranch per Year and Average.

Ranch No.	1922	1923	1924	1925	Average
50	....	64	67	....	66
25	56	66	75	70	67
19	57	58	....	....	58
26	76	80	73	74	76
48	....	50	41	56	49
10	70	74	73	76	73
23	79	64	81	77	75
38	44	56	47	37	46
14	53	64	66	65	62
43	....	57	62	66	62
1	69	57	59	60	61
15	46	66	62	62	59
69	....	....	39	69	54
68	....	....	65	80	73
53	66	86	82	73	76
36	59	58	80	67	65
7	86	71	....	....	78
3	62	86	80	91	79
40	51	43	....	....	47
2	60	54	45	45	51
35	63	70	....	....	67
16	71	65	69	54	65
66	....	....	76	68	72
34	70	75	68	68	70
47	....	41	61	55	52
70	....	....	....	57	57
62	....	....	63	70	67
67	....	....	60	65	62
63	....	....	74	77	76
64	....	....	86	80	83
61	....	....	39	67	51
65	....	....	73	78	76
Av.	61	67	65	66	64



The three areas in the mountain region had calf crops as follows (average for period studied): North Park, 65 percent; San Luis Valley and Gunnison, 64 percent; and foothill ranches, 61 percent. This varied on the North Park ranches from 83 percent down to 47 percent. On the San Luis and Gunnison group from 76 down to 46 percent; and on the foothill ranches from 65 down to 57 percent. The extreme range in percentage of calf crop was from 39 to 91 percent.

This shows that good or poor calf crops are not common to any one locality but that the North Park group seems to have the advantage, due no doubt to the fact that cows are brought thru the winter in better shape. The abundance of hay and the more liberal use thereof more than overcomes the handicap of a longer and more severe winter.



Figure 11.—A good calf crop is an important factor in successful ranch operation.

Some of the men used grain in various quantities to put their bulls in good condition for the breeding season. These men, eight in number, representing ranches of all sizes and from all districts, secured an average calf crop of 69 percent while the other twenty-four, also from all districts, averaged only 60 percent. The average amount of grain fed was only about 50 pounds and the cost about \$1.00 per bull per year.

Breeding in pastures instead of on the national forest ranges was practiced by eight of the men. They secured an average calf crop of 72 percent compared to 61 percent for the other 24 ranches who ran the breeding herd on the national forests.



The length of the breeding season is a question that is given a good deal of weight by some. The time that the bulls were in the cow herd on these ranches varied from less than four months to the entire year. A few men claimed that in order to obtain satisfactory calf crops it was necessary to run the bulls in the cow herd all year. The eighteen ranches that kept the bulls in the cow herd six months or less had calf crops of 68 percent, while the other fourteen ranches that kept them in the herd over six months had calf crops of only 58 percent.

The number of cows per bull is perhaps not so important as some would have us believe. There must of course be a sufficient number of bulls, but just what that number should be, depends largely on the system under which they are run and the way they are handled. Table 16 shows these 32 ranches grouped as to number of cows per bull and the resulting calf crop.

TABLE 16.—Relation Between Number of Cows per Bull and Calf Crop.

Cows per bull	No. of ranches	Calf crop
20 and less .....	4	65
21 to 25 .....	9	69
26 to 30 .....	12	62
31 and over .....	7	55

Twenty-five cows per bull is the rule on the national forests and the above figures seem to indicate that more than this tends to reduce the calf crop.

The age at which the heifers are bred to drop their first calves seems to be of importance. Thirteen of the ranches bred their heifers to calve as two-year-olds and the average calf crop on these ranches was 57 percent while the other nineteen ranches had their heifers drop the first calf as three-year-olds and the calf crop was nearly 69 percent or about 12 percent advantage over the first group. No material difference was observed in death loss on cows in the two groups altho it was a shade heavier in the group that bred their heifers to calve as two-year-olds.

Summing up the factors affecting the calf crop, one finds several important practices that result in better calf crops. Chief among them appear to be feeding bulls during the winter; breeding heifers to calve as three-year-olds; pasture breeding; about 25 cows per bull; and leaving bulls in the herd six months or less. Ranches following these practices secured calf crops better than the average. Five ranches practiced four or more of these points and secured 74 percent calf crops. Six men who fed their bulls and bred heifers to calve as three-year-olds secured 73 percent calf crops. In these two cases the lowest calf crop on any of these ranches was 66 percent compared to an average of 64 percent for all ranches.



Many opinions were given by ranchmen concerning the problems in connection with the care of cows and bulls and causes for variation in calf crops. There is almost unanimous agreement that calf crops at the present time are not as good as previously. Various reasons are given for this state of affairs. Some claim that one of the main causes is the deteriorated range, that grazing, especially winter and spring grazing, is not as good as in the past. This no doubt would be true and especially so in the more southern districts.

Another problem associated with calf crop is the question of type of bull used. Purebred cattle production is carried on for the most part at low elevations. The object is to secure animals that make a good show-ring appearance, that will fatten cheaply and top



Figure 12.—Heavy, well-bred bulls are typical of the mountain ranches.

the market. This development has largely overlooked the peculiar requirements of the mountain range. Here cattle must travel considerable distances, over steep hills, and prove their ability to forage under adversity.

Under these conditions extremely heavy show-ring finish bulls prove a disappointment. They do not travel easily and consequently do not get enough calves.

The improvement of range cattle thru the use of well-bred bulls and careful culling of breeding cows must continue of course, but some way must be found to increase the number of calves from a given number of cows and bulls, at the same time improving the quality.

In an effort to overcome these obstacles some men are keeping their breeding herds off the national forests in fenced pastures. Some keep them in fenced pastures for a month or so in an effort



to get most of the cows bred before turning on the forest. That these methods are effective is shown in the preceding pages but not all cowmen are situated so they can do either of these things. The suggestion is made that some arrangement might be made with the national forest service to fence certain parks or open parts of the range where the feed is especially good and to use these as breeding pastures for a month or six weeks. Where irrigated pastures are feasible they might be used for this purpose to good advantage.

The ranchmen's estimate of the length of useful life in the breeding herd averaged seven years for cows and four years for the bulls, varying from four to ten years for cows and from two to six years in the case of bulls. This would amount to 14.3 percent replacement per year of cows and 25 percent replacement of bulls. The actual replacement of bulls as found in this study is very close to this estimate, being 25.8 percent or 3.87 years of service life. The actual replacement of cows is shown to be 22.9 percent or about four and one-third years instead of the estimate of seven years in the breeding herd. The reason for this is no doubt the practice of most mountain ranches to sell the dry, grass-fat cows. This results in a great many young cows going to market while on the other hand many cows stay on the ranch until 10 to 15 years old or as long as they produce a calf each year.

The men who kept their breeding herds in fenced pastures had a 24 percent yearly replacement on bulls as compared to 27 percent for the forest users. This turnover is as low as 17 percent on some of the ranches that breed on pasture and is accomplished by using different pastures for older cows and heifers and placing the bulls so as to prevent inbreeding. They can in this way use bulls for five and six years.

**6. Death Losses.**—The average percentage death loss on all classes of cattle and for the entire period in this study was only 3.1 percent, ranging from as low as 1 percent to almost 6 percent.

The heaviest loss was on yearling heifers, the average on these being 4 percent; cows showed a death loss of 2.8 percent; two-year-old heifers, 2.9; yearling steers 3.9; two-year-old steers, 1.8; and aged steers, 1.4 percent.

These death losses are not particularly excessive yet can be reduced as is shown by the record of some ranches that take better care of the cattle.

Sources of loss are mostly from poisonous plants, the loss of cows and heifers at calving time, diphtheria in calves and some black-leg which occurs every year before calves are vaccinated and sometimes due to poor vaccine. One of the heaviest losses reported every



year is the "missing," strayed and stolen. A great many of these cattle are located later in some neighbor's herd, reported and returned to the owner. Many are caught at loading points and central markets by the practiced eye of a brand inspector who often must use the clippers to enable him to determine ownership and may even have to read the brand from the "inside" to make absolutely sure. The multiplicity of brands, thousands of them being recorded in the state, makes the brand inspector's job a difficult one, and since a great many cattle are slaughtered and find their way into the channels of the meat trade without the benefit of this "clergy," a large proportion of the missing cattle can be charged to the cattle thief.

In the past many cowmen figured (and some still do) that it was more economical to stand a 10 percent death loss on cows thru the winter with little or no supplementary feed, than to feed, say two tons of hay per cow, and have little or no death loss. They would figure this way: A 10 percent loss on \$60.00 cows equals \$6.00 per cow, and two tons of hay at \$4.00 equals \$8.00 per cow, an apparent saving of \$2.00 per cow. This method of figuring is fast going out of use as evidenced by the liberal use of feed and the low percentage death loss.

Losses vary greatly from year to year and from season to season, and it is largely the cattleman's ability to meet emergencies promptly and efficiently that keeps losses down to the minimum.

**7. Ranch Labor.**—The efficiency of labor is an important item on cattle ranches as well as in any other industry. Labor constituted about 39 percent of the entire ranch expense or an average of \$4,187 per ranch. Of this amount 12.5 percent represents the value of operator's and family labor while the other 87.5 percent is hired labor. Table 17 shows ranch labor expressed in months per ranch per year.

Of the total time expended on the ranches, 42 percent was work directly connected with cattle such as riding, feeding and working cattle, 4 percent to other livestock, mostly sheep, and 54 percent was labor on hay and other feed-crop production. In 1922, the hired labor cost \$85 per month, including a charge for board; \$86 in 1923; \$88 in 1924; and \$84 in 1925. The average cost of ranch labor (hired) for the four years was \$86 per month.

One measure of ranch-labor efficiency that has been used to a considerable extent is the number of cattle handled per man. On the 32 ranches in this study the number of cattle handled per man varied from 221 to 1,391 (including calves). The average for all ranches was 524 head per man. Average number of head on hand for the entire year has been used and only labor directly connected with cattle has been considered. The ranch showing 1,391 head



TABLE 17.—Amount of Ranch Labor by Years Including Operator's and Family Labor

Ranch No.	1922	1923	1924	1925	Average per year
	(mos.)	(mos.)	(mos.)	(mos.)	(mos.)
50	.....	71.4	173.3	.....	122.35
25	134.9	151.8	114.3	133.9	146.22
19	87.2	108.2	.....	.....	97.7
26	148.82	157.15	163.45	157.4	156.71
48	.....	87.62	64.8	58.5	70.31
10	82.8	83.6	89.8	97.1	88.32
23	66.9	58.9	65.2	65.5	64.12
38	100.2	80.5	108.3	73.5	90.62
14	62.	65.5	66.	79.2	68.17
43	.....	43.9	40.5	48.5	44.3
1	61.2	59.	39.4	61.7	55.32
15	44.2	41.5	49.8	57.	48.12
69	.....	.....	42.42	38.9	40.66
68	.....	.....	45.6	53.	49.3
53	54.8	54.1	55.85	44.3	52.26
36	55.94	61.	53.19	50.83	55.24
7	53.7	52.25	.....	.....	52.98
3	42.13	47.23	40.48	46.2	44.01
40	29.1	30.8	.....	.....	29.95
2	35.6	33.9	38.0	36.1	35.9
35	50.1	65.3	.....	.....	57.7
16	34.5	35.4	34.5	27.4	32.95
66	.....	.....	26.85	26.7	26.78
34	30.55	29.0	31.71	37.33	32.14
47	.....	50.4	61.1	50.6	54.03
70	.....	.....	.....	31.5	31.5
62	.....	.....	27.	25.3	26.15
67	.....	.....	22.04	26.9	24.47
63	.....	.....	18.5	19.1	18.8
64	.....	.....	37.1	32.	34.55
61	.....	.....	18.4	20.6	19.5
65	.....	.....	15.82	18.	16.91
Av.	68.04	66.75	57.17	52.48	60.48
Percentage to cattle	44	42	42	40	42
Percentage to sheep	3	4	4	5	4
Percentage to hay and crops	53	54	54	55	54
Percentage of total by operator	14	15	22	24	19

handled per man was a very large ranch all fenced and comparatively little winter feeding done and no cattle run outside of the fenced pastures.

The eight men that ran the breeding herd in fenced pastures handled about 100 head more cattle per man than the men using the national forests for the breeding herd. Size of outfit seemed to have some influence on number of cattle handled per man. Twelve ranches with an average of 500 or less cattle per ranch handled 434 cattle per man, 14 ranches with herds between 500 and 1000 head handled 470 cattle per man and the other six ranches with herds of 1000 head or more handled 628 cattle per man.

Pooling cattle on the national forest and hiring the herder, each member of the pool paying a prorata share of the cost according



to the number of cattle run, will cut summer labor costs considerably but usually has not proved entirely satisfactory in other respects. Cowmen as a rule like to look after their own cattle.

In the North Park area it is commonly figured that one man can take care of 500 head thru the winter. This would mean hauling and scattering at least four loads of hay per day and would seem a little too much, especially in hard winters when snow gets very deep. That it is too much is borne out by our records which show that few men actually care for that many, while some men, whose herds number less than 500, hire considerable extra help besides putting in all their own time.

The expenditure of more labor, however, should show results in better calf crops and lower death loss. The records verify this opinion as the nine ranches handling less than 400 head per man had an average calf crop of 72.2 percent, those handling between 400 and 550 head had a 65.4 percent calf crop, while those handling over 550 head per man had an average calf crop of 61.6 percent. The death loss for the first-named groups was practically the same, 2.8 and 2.4 percent respectively, but on the last named group it was 3.8 percent.

It seems clear that merely to increase the number of cattle per man would not mean greater profits but effort should be made to improve the quality of the labor by endeavoring to secure good experienced men and providing good living quarters and paying them sufficient wages to induce them to stay. Where employment can be given the year round a married man is considered by many ranchmen the best kind of labor as he does not move around so much.

## MARKETING CATTLE

1. **Principal Markets for Colorado Cattle.**—There was considerable search by the men in this study for a better market during the years 1922 to 1925. In 1922 about 60 percent of all the cattle sold on the central markets from these mountain ranches went to Denver and a third of them to Omaha, with the balance going to St. Louis, St. Joseph and Sioux City.

The next year feeder cattle from the North Park and Gunnison sections of Colorado were sent to the auction markets of Iowa, about 29 percent of the total shipments from these ranches going to the auction sales and only 5 percent to Omaha. Denver received about 60 percent and St. Joseph the balance.

In 1924 the auction markets received only 25 percent, Denver increased to 68 percent and Omaha about 7 percent.

In 1925 shipments to the auction markets were discontinued and 81 percent of the shipments went to Denver, 13 percent to Kansas City and 4 percent to Omaha.



Denver was the only market consistently receiving a large percentage of these cattle shipments. Omaha dropped from 32 percent to 4 percent. Kansas City received no cattle the first two years and 13 percent the last. The Iowa auction markets were important factors for two years, then faded from the scene.

Another adjustment in marketing practice shows this same search for better prices. In 1922 only 31 percent of the cattle sold from the mountain ranches were sold locally at the ranch. This dropped to 29 percent in 1923. In 1924 the local sales jumped to 46 percent of the total and in 1925 still further increased to 61 percent. Most of these local sales were to men who intended to run the cattle for another season on the range or to men who went direct to the ranch to buy their feeder cattle.

2. **Origin of Cattle Shipments to Denver and Omaha.**—The shipments from these mountain ranches conformed quite closely with shipments to market from Colorado as a whole. Thru the courtesy



Figure 13.—Corralling cattle for inspection and sale as feeders.

of the stockyards officials at Omaha and Denver, and from the records of the market receipts compiled by the United States Department of Agriculture, the following comparisons are possible:

For the years 1922 to 1925 inclusive, Colorado shipped an average of 441,214 head of cattle yearly to the Denver market. This was 70.8 percent of the total receipts at the Denver stockyards from all states. Denver is primarily and logically a Colorado market.



For the same years Colorado shipped an average of 90,780 head of cattle to the Omaha stockyards which was about one-fifth as much as to Denver and was only about 5 percent of the receipts at Omaha. Nebraska, Iowa and Wyoming are the heavy shippers to the Omaha market.

The total shipments of Colorado cattle to all markets for 1924 was 674,110 head, according to the United States Department of Agriculture. Of this number 67 percent went to Denver, 12.2 percent to Omaha and 20.8 percent to all other markets. In 1925 the total shipments from Colorado had increased to 729,684 of which 61.2 percent went to Denver and 11.7 percent to Omaha and 27.1 percent to all other markets.

When one considers the dominant position which the Denver market holds in the marketing of Colorado cattle, it seems desirable that the comparative costs and prices at Denver be checked carefully with other markets.

The present (1927) freight rates on cattle thru the Denver market are adjusted so that it penalizes Denver on the slaughter of cattle for reshipment as fresh meat. For example, the freight on cattle from Denver to Los Angeles is \$222 per car with minimum earload weights varying from 26,000 to 30,000 pounds or approximately 85 cents per 100 while the dressed-meat rate is \$2.26 per hundredweight. On one actual comparison for 77 earloads of cattle, the freight on the dressed meat cost \$153.50, per car of live cattle, in excess of the live-weight freight to Los Angeles.<sup>1</sup>

On cattle shipments thru Denver to the river markets, freight rates are also adjusted to penalize slaughter at Denver.

As long as such inequalities exist the Denver market should suffer under the handicap while the river and California markets will be in a position to offer better prices for the fat cattle. Cattlemen should watch the markets carefully to find which is offering the best price. However, as most of the cattle moving direct from the range go into the feedlots, this condition at the Denver market is not so direct a handicap on feeder prices.

The growing tendency to sell feeders at the ranch which was shown in 1924 and 1925 may work out all right if the rancher is informed as to market prices, but in times of rapidly fluctuating market prices for cattle, ranch sales usually bring less than market prices.

Many instances of such losses were noted in the fall of 1927. When prices began to rise, in some instances, ranch sales brought \$3

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<sup>1</sup> According to L. M. Pexton, traffic manager, Denver Stockyards, in freight-rate hearing I. C. C. Docket 17,000, Part 9.



per hundred less than similar cattle were selling for at the market.<sup>1</sup> No such discrepancies were found during the years 1922 to 1925 because there were few changes in cattle prices, except for the worse, and that stimulates a desire to sell locally and to cut every possible item of expense.

3. **Age of Cattle at Marketing.**—Table 18 gives the numbers of cattle sold from each ranch. More cows are sold than any other one class of cattle. Of the young growing stock, yearling steers led in number of sales, followed closely by two-year-old steers and calves. Comparatively few sales were made of either aged steers or heifers.

**TABLE 18.—Numbers of Cattle Sold by Classes—Average for Period Studied.**

Ranch No.	Total sold	Cows	Bulls	Calves	Yearling		Two-year-olds		Aged steers
					Heifers	Steers	Heifers	Steers	
50	849	334	....	14	4	127	....	225	145
25	912	177	8	372	11	76	....	124	144
19	1010	219	20	383	40	147	....	117	84
26	863	191	13	108	152	303	16	76	4
48	415	67	5	105	19	86	41	92	....
10	316	56	4	34	3	45	1	105	68
23	331	101	5	6	18	58	24	84	35
38	308	71	2	46	39	74	26	47	3
14	252	61	10	3	18	36	10	114	....
43	290	64	5	123	....	83	....	15	....
1	231	89	3	2	....	42	19	60	16
15	290	107	3	....	4	46	40	72	18
69	282	45	6	84	55	53	....	34	5
68	253	87	3	2	18	98	17	28	....
53	195	57	3	....	....	47	32	56	....
36	268	97	5	2	33	10	6	95	20
7	176	26	4	....	....	....	....	38	108
3	203	49	3	1	2	77	22	48	1
40	226	130	....	....	....	79	....	17	....
2	162	57	2	....	....	36	8	53	6
35	172	52	3	4	1	32	16	64	....
16	186	64	3	7	6	34	14	39	19
66	145	64	6	....	....	32	....	32	11
34	146	60	1	1	....	59	9	16	....
47	169	61	2	47	....	42	7	10	....
70	105	49	2	....	....	....	....	54	....
62	76	8	1	....	4	30	1	30	2
67	161	70	6	....	31	33	20	1	....
63	142	37	1	23	....	47	25	9	....
64	64	17	1	....	....	....	2	44	....
61	40	20	....	....	....	....	....	4	16
65	94	23	2	25	2	20	14	7	1
<hr/>									
Av. per ranch	306	84	4	45	16	62	13	60	22
Percent of total number sold		27.2	1.4	14.6	5.3	20.2	4.3	19.7	7.3
Percent of total value		23.5	1.7	8.8	4.0	19.8	4.1	26.2	11.9

Table 19 shows the percentage of the growing cattle sold at different ages. Ranches 7 and 61 sold mostly aged steers. Ranch 67 sold heifers. Ranches 14, 36, 70 and 64 sold mostly two-year-old

<sup>1</sup> According to B. F. Davis, secretary, Colorado Stock Growers Association.



steers. Ranches 68, 3, 40 and 34 sold mostly yearling steers. Ranches 25 and 43 sold mostly calves.

For all ranches yearling steers were the most important in number of sales, two-year-old steers next, calves third in number, aged steers next and heifers last in number of sales.

The bulk of the sales from these ranches were classed as feeder cattle. Very few sales of fat cattle were made except in the case



Figure 14.—Long yearlings coming off the national forest in good condition.

of cows which went mostly to butchers. The mountain parks of Colorado have always had a good reputation as a source of fine-quality feeders for the irrigated farms of eastern Colorado or for the cornbelt states.

**4. Central Market Prices for Feeders.**—As previously noted there was much variation in the importance of the markets to which these ranchmen consigned their cattle. Denver, however, led. The yearbooks of the United States Department of Agriculture show average monthly prices for each important class of cattle at Omaha. The average Omaha price in 1922 on common to choice feeder cattle weighing 750 pounds or better for the three months, October, November and December, was \$6.41. Ranch shipments to all markets for



TABLE 19.—Percentage of Growing Cattle Sold at Various Ages.

Ranch No.	Heifers				Steers		Marketing practice
	Calves	Yearlings	Two's	Yearlings	Two's	Aged	
50	2.7	8	—	24.7	43.7	28.1	Two-year-old, aged and yearling steers
25	51.2	1.5	—	10.4	17.1	19.8	Calves, aged steers, two-year-old and yearling steers
19	19.7	5.2	—	19.0	15.2	10.9	Calves, yearling, two-year-old and aged steers
26	16.4	23.1	2.1	46.0	11.5	.6	Yearling steers and heifers, calves and few two's
43	30.6	3.5	12.0	25.1	26.8	—	Calves, one and two-year-old steers, few heifers
10	13.3	1.2	.4	17.6	41.0	26.5	Two-year-old and aged steers, few calves and yearlings
23	2.7	8.0	10.7	25.8	37.3	15.5	One and two-year-old and aged steers, few heifers
38	19.5	16.6	11.1	31.5	20.0	1.3	Calves, yearlings and two-year-olds
14	1.7	9.9	5.5	19.9	63.0	—	Two-year-old and yearling steers, few heifers
43	55.7	—	—	37.5	6.8	—	Calves, yearling steers and few two-year-olds
1	1.4	—	13.7	30.2	43.2	11.5	Two-year-old, yearling and aged steers, few heifers
15	—	2.2	22.2	25.6	40.0	10.0	Two-year-old, yearling and aged steers, few heifers
69	36.4	23.8	—	22.9	14.7	2.2	Calves, yearling steers and heifers, few older steers
68	1.2	11.0	10.4	60.2	17.2	—	Yearling steers and two-year-old heifers and steers
53	—	—	23.7	34.8	41.5	—	Two-year-old and yearling steers, two-year-old heifers
36	1.2	10.9	3.6	6.0	57.2	12.1	Two-year-old steers, few aged steers, yearling heifers
7	—	—	—	—	26.0	74.0	Aged steers, some two-year-olds
3	.6	—	14.6	51.0	31.8	.7	Yearling and two-year-old steers, some two-year-old heifers
40	—	—	—	82.3	17.7	—	Yearling and two-year-old steers
2	—	—	7.8	35.0	51.4	5.8	Two-year-old and yearling steers
35	3.4	9	13.7	27.3	54.7	—	One and two-year-old steers and two-year-old heifers
16	5.9	5.0	11.8	28.6	32.7	16.0	All ages and classes
66	—	—	—	42.7	42.6	14.7	Yearlings, two-year-olds and aged steers
34	1.2	—	10.6	60.4	18.8	—	Yearling steers and two-year-old steers and heifers
47	44.4	—	6.6	33.6	3.4	—	Calves, yearling steers, few two-year-old heifers and steers
70	—	—	—	100.0	—	—	Two-year-old steers
62	—	6.0	1.5	44.7	44.8	3.0	Two-year-old and yearling steers
67	—	36.5	23.5	38.8	1.2	—	Yearling steers and heifers, two-year-old heifers
63	—	—	24.0	45.2	8.7	—	Yearling steers, two-year-old heifers and steers, calves
64	22.1	—	4.3	—	95.7	—	Two-year-old steers, few two-year-old heifers
61	—	—	—	—	20.0	80.0	Aged steers and two-year-olds
65	36.2	3.0	20.3	29.0	10.1	1.4	Calves, yearling steers, two-year-old heifers and steers
Av.	21.1	7.0	5.6	28.1	27.5	10.7	



these three months of 1922 constituted 69.2 percent of their yearly shipments. The average central market price received by these ranchmen for yearling steers was \$6.43 and \$6.24 net for two-year-old steers. Apparently market receipts were better in 1922 than the average Omaha price as the prices quoted at Omaha were for cattle delivered at the market while the prices received by the ranchmen were net above marketing costs. It costs from 70 to 90 cents per hundredweight to put Colorado mountain cattle on river markets.

In 1923 and 1924 the net prices received for ranch shipments when compared to Omaha prices were very similar to the detail for 1922.

In 1925 very few cattle were shipped to Omaha. That year the feeder steers 800 pounds and over, common to choice, averaged \$8.19 on the Omaha market for the three months, October, November and December. Ranch shipments of yearling steers in 1925 netted \$6.44 per hundredweight and two-year-old steers netted \$6.92 per hundredweight. Apparently the prices for 1925 were not as favorable compared to Omaha prices as they had been the three years previous. In 1922, 1923 and 1924, about one-third of the ranch shipments went either to Omaha or to Iowa auction markets. In 1925 neither of these markets was used to any extent. A larger proportion of the cattle sold in 1925 were sold at the ranch and most of those shipped went to Denver, hence comparisons are difficult. Ranch sales locally in 1925 were the best of any of the four years.

Prices on the Denver market have never been published. In fact they are not available prior to 1924 in any form except on the market pages of the various daily papers. Starting with 1924, the United States Department of Agriculture has compiled weekly price comparisons for each important class of animals sold on the Denver market. In the spring of 1924 these prices for feeder cattle compared favorably with the Omaha prices. In the summer of 1924 they were less. In the winter and spring of 1924-25 they were better than Omaha prices. In the fall of 1925 Omaha prices were better. These variations between the two markets suggest that it would be decidedly worth while to keep a very close check upon both Denver and the river markets before shipping.

Table 20 shows the average return for all four years both per hundredweight and per head. Cows and aged steers are the only two classes of cattle that brought a higher net return per hundred at the central markets than at the ranch sales.

This also applies to the returns per head. Two-year-old steers brought slightly more per head at central markets than at the ranch while the price per hundred was best at the ranch. The difference either way is small and is caused by differences in the sale weights.



**TABLE 20.—Comparison of Ranch and Central Market Sale Prices:  
Average for Period Studied.**

Class of cattle	Average net price per cwt.		Average net price per head	
	Ranch sales	Central market	Ranch sales	Central market
Cows .....	\$3.55	\$3.88	\$34.21	\$37.17
Bulls .....	4.19	2.80	56.64	38.64
Calves .....	7.54	5.83	28.55	20.55
Yearling steers .....	7.07	6.45	40.96	40.00
Two-year-old steers .....	6.83	6.75	53.50	55.00
Aged steers .....	6.12	6.88	63.45	70.10
Two-year-old heifers .....	5.44	4.72	41.96	38.98
Yearling heifers .....	6.58	4.65	32.86	28.85

On the whole there is no apparent incentive for cattlemen to do their own shipping to market when they can net as large returns thru local sales. The reputation of Colorado mountain cattle for feeding purposes is partly responsible for these favorable ranch sales. As previously discussed, 61 percent of all sales in 1925 were at the ranches. Where prices are equally good, this is a desirable situation as there is a saving to the purchaser of his freight charges and other market expenses thru the cattle markets. He is able to see the cattle in their native surroundings and decide better as to their quality. This helps him to get the type of feeder that he desires. He can avoid some risk of disease and save considerable shrinkage.

It must not be forgotten, however, that the success of such local marketing on the part of the ranchmen depends upon the continuance of strong central markets and a prompt market quotation service so that both buyer and seller can have a reliable guide to aid them in arriving at fair prices.

5. **Marketing Costs.**—The average expense for freight, commissions, feed, etc., from the mountain areas to the central markets was as follows:

**TABLE 21.—Market Expense per Hundredweight of Sales on Market—  
Average for Period Studied.**

Origin of Shipment	Denver	Omaha	River
North Park .....	\$ .56	\$ .70	\$ .....
Middle Park .....	.52	.86	.....
Gunnison .....	.59	.....	.73
San Luis Valley .....	.61	.....	.76
Northern Colorado foothills	.30	.....	.....

With these expenses in mind it should be comparatively easy to check up on the different markets and find which one offered the best market. There will be minor changes in the above values for different ages and weights of cattle and further changes whenever freight rates are modified.



6. **Auction-Sale Costs.**—In the fall of 1923 many of the cattlemen in the mountain parks of Colorado decided to use direct shipments to Iowa auction markets for their feeders, rather than sell thru the established markets. Some of the men whose records are included in this bulletin made such shipments. The extension service and department of animal husbandry of the Colorado agricultural college took an active interest in these sales. Thru their cooperation and courtesy the following results are available. They are included here as being of considerable value in understanding the marketing situation.

On November 13, 1923, 2,556 head of cattle of all ages were sold at Atlantic, Iowa, by 28 shippers. Of this number 1,674 were calves, 709 yearling steers, 72 two-year-old steers, 86 yearling heifers and 15 cows. The auction charges were flat rates of \$2.50 per head on calves and \$3.00 per head on all other cattle. The calves sold at an average of \$25.32; yearling steers sold for \$42.94; two-year-old steers, \$61.33; heifers, \$31.95; and cows, \$35.50.

The freight and feed on all classes averaged \$3.15 per head or 10 percent of the selling price. The commission on calves amounted to practically 10 percent of the selling price. For all cattle the selling commission amounted to 8.4 percent of the sale price.

There were two other auction sales in November but the total number of cattle handled for the two amounted to only 2,033. No calves were sold at these later sales.

There were five auction sales in the fall of 1924. The total number of cattle sold at the five sales amounted to 3,971, or less than for the three sales in 1923. The flat rate for selling was cut to \$2.35 per head for all cattle except calves. Practically no calves were sold.

The September 2, 1924, sale was typical of the 1924 sales. Here 789 head of cattle were sold at an average of \$49.43 per head. Freight amounted to \$4.38 or 8.8 percent of the selling price. Feed amounted to \$0.95 or 2 percent of the sale price. Commission amounted to \$2.35 or 4.7 percent of the sale price.

The above analysis includes all cattle handled on the dates considered and gives no separate comparisons for the few men included in this study. The chief objection of cattlemen to the auction sales centered around the high commissions. Two dollars and fifty cents per head seemed excessive compared to market rates of 75 cents per head with \$21.00 per car maximum charges.

In 1926, the year after these records were secured, the cattlemen of North Park sold many feeder cattle at local auctions held at Walden or other centers in the North Platte Valley. No records



were available from these auctions, but current opinion was uniformly favorable and cattlemen were well pleased with the results of these local auctions.

In 1927 these local auctions were abandoned, the reason published being that with the higher cattle prices men had lost interest in the subject and were satisfied with the central markets.

It is practically impossible to decide whether the net returns on cattle thru the auctions were higher or lower than sales at the central markets. A study of market prices at the Chicago market for the days of the auction sales suggests that on the whole the auctions brought as high a net price as the central markets.

The difficulty of accurately answering this question, coupled with somewhat greater effort involved in using the auctions, a feeling on the part of cattlemen that they were at the mercy of the auction market in case too few buyers came to bid as they could not afford to reconsign their cattle and the return of better cattle prices in 1925, all combined to turn cattlemen away from the auction markets.

7. **Average Sale Weights.**—The cattle sold from mountain areas of Colorado show consistent gains from year to year as indicated by Table 22. The average weight on aged steers was 1030 but many sales of this class went well over 1100 pounds, especially in 1922 when most of this class of cattle was disposed of. After 1922 few cattle were kept on the ranch beyond long two-year-olds.

TABLE 22.—Average Sale Weights per Head by Years and Classes.

Class of cattle	1922	1923	1924	1925	Average
	(lbs.)	(lbs.)	(lbs.)	(lbs.)	(lbs.)
Cows	922	944	948	956	956
Bulls	1400	1360	1350	1387	1370
Calves (9 mo.)	367	363	379	365	367
Heifers, 1's	494	522	513	579	538
Steers, 1's	608	585	594	624	602
Heifers, 2's	752	733	822	777	786
Steers, 2's	842	831	794	812	823
Aged steers	1083	964	966	985	1030

8. **Effect of Prices on Marketing Practice.**—During the years covered by this study, 1922 to 1925, cattle prices were low relative to all prices. Since 1925 there has been a decided change for the better.

With these changed conditions obviously come changes in the attitude of cattlemen toward marketing. Policies that were necessary or desirable during times of low prices may need adjustment when prices are rising or at a high level. Sound plans for the future must be based on careful analysis of the past. With this in mind one should analyze the marketing practices reviewed above and com-



pare the results shown with known present conditions, making such changes in marketing practice as would be dictated by experience.

### PROFITABLE RANCH ORGANIZATION

The analysis of these mountain ranches shows many variations in the method of handling the cattle business and considerable variation in the financial results obtained.

On the whole the period was one of small profits in the cattle business. Many cattlemen failed and went out of business; yet at the same time some ranches made money. Methods that result in profit during times of general depression are worthy of further study and analysis. How did they do it? Was it the location or was it the skill of the operator that produced the profit?

Ranches 25, 15, 14 and 34 were selected for further detailed study.

**Ranch 25.**—Ranch 25 is the second largest ranch in this study in point of number of head of cattle. Table 23 shows the organization set-up on this ranch together with expenses and returns on investment.

This ranch leased 57 percent of the land used, owning the other 43 percent. Besides this the national forest is used for nearly all cattle for a little over four months during the summer. A little public domain affords some grazing in early summer.

About 52 percent of the total investment is in productive livestock while only 45 percent is in land and improvements. In 1922 only 43 percent of the cattle were breeding cows and by 1925 this had been changed to 63 percent. Most of the steers of all ages that were on the ranch in 1922 had been sold off and the heifers added to the cow herd.

Nearly all of the cash receipts came from sales of cattle. Twenty-eight percent of this cash income was from sales of aged steers three years old and over; 24 percent from calves; 21 percent from cows and bulls; 19 percent from two-year-old steers; and 8 percent from sales of yearlings. Part of the income is increase in inventories, especially in 1924 and 1925, but this is more than offset by the decrease in 1923 when the herd was reduced by sales of 1700 head.

This man was caught with a lot of heavy cattle in the early stages of the depression and tried to stay with them in the hope of better prices but had to let go of most of them in 1922 and lost a good deal of money on them. In 1923 about 650 mixed calves were sold and in 1924 and 1925, about 420 steer calves were sold each year. This ranch is admittedly overstocked but, thru the period of



this study, was cutting down the herd to finally eliminate the expense of buying feed and pasture.

The volume of business on this ranch permitted the practice of economies that are not often possible on the small ranch. Cash expenses, for instance, were reduced from \$34,000 in 1922, to \$19,000 in 1925. The most important items in this reduction were hay and pasture purchased and hired labor.

Calf crops averaged 67 percent on this ranch. Death loss was quite high—5 percent as compared to the average of 3 percent on all ranches. Of all losses of cattle about 30 percent occurred on the national forests, 28 percent on the public domain and 42 percent at

TABLE 23.—Organization and Returns on Ranch 25.

Years	1922	1923	1924	1925
Land area, total acres	13,115	13,115	10,200	11,480
Owned land	5,120	5,120	5,120	5,120
Leased land	7,995	7,995	5,080	6,360
Grazing land	8,755	8,755	7,040	8,320
Hay and crop land	4,360	4,360	3,160	3,160
Number cattle first of year	3,166	3,236	2,282	2,536
Cows	1,358	1,359	1,504	1,587
Bulls	68	65	64	77
Short yearlings	862	761	246	714
Short 2-year steers	296	401	101	41
Short 2-year heifers	264	396	345	117
Aged steers	318	254	22	.....
Number calves branded	761	893	1,133	1,106
Number horses first of year	87	90	90	113
Investment, total	\$251,414	253,538	220,380	226,432
Owned land	82,812	82,812	82,812	82,812
Improvements	24,888	24,328	23,768	23,208
Equipment	4,154	3,593	3,217	2,989
Range cattle	135,410	138,660	106,518	112,863
Horses	4,150	4,145	4,065	4,560
Indebtedness, total	119,862	122,513	133,812	127,081
Owner's equity	131,552	131,025	86,568	99,351
Cash receipts, total	34,937	71,023	27,608	24,490
Range cattle	34,937	70,187	27,153	24,415
Livestock products	.....	.....	.....	75
Crops and miscellaneous	.....	836	455	.....
Increase in inventories	3,497	967	6,840	10,565
Cash expense, total	34,216	22,469	16,324	19,218
Feed	7,500	380	1,056	2,792
Leases	4,684	4,684	534	634
Forest fees	376	420	351	352
Taxes	2,372	1,863	1,847	1,483
Hired labor	15,177	12,963	9,369	11,359
Cattle bought	2,620	1,128	2,210	500
Miscellaneous cash	1,487	1,031	957	2,098
Decrease in inventories	5	32,222	1,551	543
Depreciation	1,272	1,198	1,239	1,305
Total ranch receipts	38,434	71,990	34,448	35,055
Total ranch expenses	35,493	55,889	19,114	21,066
Receipts minus expenses	2,941	16,101	15,334	13,989
Operator's unpaid labor	600	600	600	600
Return for total investment	2,341	15,501	14,734	13,389
Paid interest	9,459	9,656	10,563	9,883
Return for owner's equity	-7,118	5,845	4,171	3,506
Percentage return on total investment	.93	6.11	6.69	5.91
Percentage return on owner's equity	-5.41	4.46	4.82	3.53



home during the winter-feeding period. The national-forest and public-domain losses were caused mostly by poisonous plants, while the winter losses were due to a variety of causes and consisted mostly of weaned calves. On this, as on the other North Park ranches, starvation is not an important cause of death loss.

Heifers are bred to calve as three's and 23 cows are run per bull. Bulls are in the breeding herd 5.5 months from July 15 to January 1. A small amount of cottonseed cake is fed to bulls before turning out. Cows get an average of over 1.5 tons hay while bulls get about 2.5 tons. Hay feeding lasts 4.5 to 5 months, usually commencing about December 1.

While this operator was not able to reduce his indebtedness during the period of this study, yet he consistently earned a fair return on his investment after 1922. Economies due to size, favorable location and skill in management combined to carry him thru the depression.

**Ranch 15.**—Ranch 15 is located in the foothills of the eastern slope. Most of the land under control is owned. In 1925, however, considerable extra grazing and forage were purchased. The owned land comprises about ten sections and to this additional pasture is leased as needed. Only the breeding herd is run on the national forest. Steers and other market stock are held in pastures.

An average of 300 tons of hay is produced each year, 140 tons of corn silage and 600 or 700 bushels of grain. The corn silage is all fed to the weaner calves with some hay in addition. The grain is all fed to market stock and some to bulls. Cows are not fed except in storms or when the pasture is covered with snow when they get a little hay.

Death loss on this ranch averaged only 2.5 percent and the calf crops 59 percent which was 5 percent lower than the average for all ranches. The heifers are bred to calve as two-year-olds. Twenty-six cows per bull were run and bulls were in the breeding herd about eight months from May 1 to January 1. The breeding herd was turned on the national forest about June 1 and run an average of about five months.

The average total investment is \$99,861 of which about 63 percent is operator's equity. Twenty-seven percent of the total investment is in productive livestock. The high percentage of owned land which was valued at over \$9 per acre for grazing land and about \$40 for the hay and crop land made the investment in land and improvements 69 percent of the total.

Interest and taxes took 29 percent of the total receipts, taxes being 21.5 percent of the cash operating expense.



As seen from the set-up in Table 24 this ranch made no large returns for the investment but showed a tendency toward improvement. The handicap of a small proportion of the investment in productive livestock and high land values is being gradually overcome by strict economy and the returning better prices for livestock. The outstanding item of economy was the low cost of labor.

TABLE 24.—Organization and Returns on Ranch 15.

Years	1922	1923	1924	1925
Land, area, total acres	6,740	6,740	7,240	9,380
Owned land	6,420	6,420	6,420	6,420
Leased land	320	320	820	2,960
Grazing land	6,440	6,440	6,940	9,080
Hay and crop land	300	300	300	300
Number cattle first of year	617	696	788	787
Cows	337	423	330	189
Bulls	13	18	18	17
Short yearlings	86	210	298	256
Short 2-year steers	65	15	58	148
Short 2-year heifers	78	30	84	144
Aged steers	38	-----	-----	33
Number calves branded	208	298	256	210
Number horses first of year	20	20	27	32
Investment, total	\$97,633	99,359	101,209	101,244
Owned land	63,142	63,142	63,142	63,142
Improvements	6,298	6,100	5,905	5,808
Equipment	3,092	2,987	2,584	2,231
Range cattle	24,201	26,230	28,428	28,703
Horses	900	900	1,150	1,360
Indebtedness, total	\$39,111	35,490	29,104	43,732
Owner's equity	58,520	63,869	72,105	57,512
Cash receipts, total	10,185	8,339	12,027	23,055
Range cattle	10,185	8,339	12,027	23,055
Increase in inventories	2,029	2,448	862	180
Cash expense, total	8,773	6,109	8,921	9,270
Feed	339	393	94	1,426
Leases	19	28	278	1,591
Forest fees	138	138	138	189
Taxes	1,132	1,316	1,344	1,246
Hired labor	1,828	1,953	2,535	2,747
Cattle bought	4,515	1,086	3,107	815
Miscellaneous cash	802	1,195	1,425	1,256
Decrease in inventories	77	-----	-----	8,188
Depreciation	753	794	810	811
Total ranch receipts	12,214	10,787	12,889	23,235
Total ranch expenses	9,603	6,903	9,731	18,269
Receipts minus expenses	2,611	3,884	3,158	4,966
Operator's unpaid labor	600	600	600	600
Return for total investment	2,011	3,284	2,558	4,366
Paid interest	2,738	2,625	2,037	3,124
Return for owner's equity	-727	659	521	1,242
Percentage return for total investment	2.06	3.31	2.53	4.31
Percentage return on owner's equity	-1.24	1.03	0.72	2.16

**Ranch 14.**—Ranch 14 is located in the North Park district running about a thousand head of cattle and owning or controlling between 8,000 and 9,000 acres of land.

As seen in Table 25 no great return was made on investment in any year. It will be noted that the relatively small amount of in-



debtedness allowed this man a reasonable return on his own investment. After all expenses were paid, including interest, and deduction made for depreciation on equipment, there was left over \$2300 as an average for the four years.

This man did not expand his operations and go deeper in debt during the period of inflated war prices but instead sold down closely and cleared up most of his debt. Then in 1924 and 1925, it will be noted, the herd was again increasing in numbers.

Not many ranchmen had the necessary foresight to follow such a program. Many found themselves short on cattle when prices began to soar, then hesitated a little and finally plunged in and stocked heavily when prices were near the top. Ranch 14 was riding easily thru the depression and waiting for the tide to turn.

No outstanding economy was practiced on this ranch beyond good common-sense management. All the items of expense appear about normal for a ranch of this size with the hired labor perhaps a little high.

The expense for purchased feed was mostly for grain fed to steers to be marketed and to the calves after weaning. Of the steers marketed, one-third were sold as yearlings and two-thirds as two-year-olds. The effect of the grain used may be noted in the fact that the cattle sold from this ranch averaged nearly \$10 per head more on the market than the average for all ranches in this study.

Bulls are usually purchased as yearlings or calves and not used until two years old. They are fed grain and some cake the first winter together with all the hay they will clean up. The older bulls are also fed some grain, mostly oats and the hay that is left in the racks where the calves are fed.

The calves are usually fed more hay than they will clean up and get about half a pound of cottonseed cake per day. Steers, two-year-olds and some yearlings, are sent mostly to the stock shows in the winter. They are usually put on hay and cottonseed cake about the first of November and get all the best hay they will eat and an average of 1.5 pounds of cottonseed cake per day until shipping time. Cows and other she stuff, except calves, get only hay, but all they will eat of that.

Most of the cattle are run on the national forests for an average of 4.5 months. A few of the breeding cows have been kept in a fenced pasture and from these a 90 percent calf crop was secured.

This ranch is an excellent example of wise forethought during a period of rising prices. The manager entered the cattle depression with few debts and less cattle than he could handle. His national-forest allotment was consistently under-used during 1922 to 1925. As better prices began to develop he again began to increase his herd.



TABLE 25.—Organization and Returns on Ranch 14.

Years	1922	1923	1924	1925
Land, area, total acres	8,520	8,360	8,360	8,360
Owned land	4,400	4,400	4,400	4,400
Leased land	4,120	3,960	3,960	3,960
Grazing land	7,320	7,160	7,160	7,160
Hay and crop land	1,200	1,200	1,200	1,200
Number head of cattle first of year	854	843	882	1,019
Cows	341	335	390	448
Bulls	17	13	15	18
Short yearlings	248	238	284	347
Short 2-year steers	136	129	63	127
Short 2-year heifers	107	113	130	79
Young bulls	5	15	.....	.....
Number calves branded	238	286	343	340
Number horses first of year	64	68	70	68
Investment, total	\$115,036	112,080	111,530	117,690
Owned land	56,893	56,893	56,893	56,893
Improvements	11,527	11,331	11,135	10,939
Equipment	4,144	3,341	2,537	2,433
Range cattle	40,602	38,565	38,980	45,510
Horses	1,870	1,950	1,985	1,915
Indebtedness, total	\$11,450	18,103	14,215	18,494
Owner's equity	103,586	93,977	97,315	99,196
Cash receipts, total	12,470	13,665	8,658	17,285
Range cattle	12,399	13,313	8,603	17,253
Livestock products	46	.....	35	.....
Crops and miscellaneous	25	352	20	32
Increase in inventories	197	530	6,530	988
Cash expense, total	9,472	9,806	9,808	11,673
Feed	918	802	715	514
Leases	433	466	514	515
Forest fees	322	322	345	277
Taxes	953	910	747	698
Hired labor	4,608	4,817	4,902	6,130
Cattle bought	1,325	1,400	1,480	2,565
Miscellaneous cash	913	999	1,103	974
Decrease in inventories	2,037	.....	302	30
Depreciation	999	999	999	684
Total ranch receipts	12,667	14,195	15,188	18,273
Total ranch expenses	12,508	10,805	11,109	12,387
Receipts minus expenses	159	3,390	4,079	5,886
Operator's unpaid labor	.....	.....	.....	.....
Return for total investment	159	3,390	4,079	5,886
Paid interest	916	1,206	903	1,251
Return for owner's equity	-757	2,184	3,176	4,635
Percentage return on total investment	0.14	3.02	3.66	5.00
Percentage return on owner's equity	-0.73	2.32	3.26	4.67

**Ranch 34.**—Ranch 34 is a small ranch located in the southern district. It is a typical one-man ranch running less than 500 head of cattle and putting up in the neighborhood of 500 tons of hay each year.

Altho this is termed a one-man ranch it is noted that considerable labor is hired aside from the hay harvest. The hay harvest requires a little over 11 months of man labor at an average cost of \$73 per month. Hired labor with cattle, mostly herding on the national forest, averaged a little over seven months and cost about \$76 per month. During 1925 about six months of hired labor were used on sheep. In addition to this the operator spent his time working



with cattle and the hay crop, approximately half and half, which amounted to 37 percent of the total ranch labor.

This amount of labor seems more than should be necessary to operate a ranch of this size. However, the good care and management is reflected in the calf crop which averages 70 percent for the four years.

TABLE 26.—Organization and Returns on Ranch 34.

Years	1922	1923	1924	1925
Land area, total acres	700	700	700	1,340
Owned land	700	700	700	700
Leased land	—	—	—	640
Grazing land	400	400	400	1,040
Hay and crop land	300	300	300	300
Number cattle first of year	476	457	450	430
Cows	228	205	203	188
Bulls	8	12	12	11
Short yearlings	139	160	153	138
Short 2-year steers	29	18	12	6
Short 2-year heifers	72	62	70	87
Number calves branded	160	153	138	127
Number horses first of year	23	23	23	23
Number sheep first of year	—	—	—	485
Investmet. total	\$43,290	42,101	41,251	45,814
Owned land	15,189	15,189	15,189	15,189
Improvements	5,411	5,241	5,072	4,903
Equipment	2,245	1,931	1,740	1,420
Range cattle	19,330	18,625	18,135	17,410
Horses	1,115	1,115	1,115	1,125
Sheep	—	—	—	5,767
Indebtedness, total	\$18,217	18,500	18,500	20,913
Owner's equity	25,073	23,601	22,751	24,901
Cash receipts, total	6,330	4,899	5,698	11,050
Range cattle	6,330	4,899	5,698	6,168
Sheep	—	—	—	3,510
Wool	—	—	—	1,071
Crop and miscellaneous	—	—	—	301
Increase in inventories	—	57	5,777	75
Cash expenses, total	3,418	2,951	8,604	3,982
Feed	68	84	123	577
Leases	—	—	—	55
Forest fees	192	186	162	145
Taxes	579	528	527	440
Hired labor	1,401	1,267	1,474	1,889
Cattle bought	620	310	—	190
Sheep bought	—	—	5,767	—
Miscellaneous cash	558	576	551	686
Decrease in inventories	705	490	782	1,048
Depreciation	483	483	489	436
Total ranch receipts	6,330	4,956	11,475	11,125
Total ranch expenses	4,606	3,924	9,875	5,466
Receipts minus expenses	1,724	1,032	1,600	5,659
Operator's unpaid labor	600	600	600	600
Return for total investment	1,124	432	1,000	5,059
Paid interest	1,093	1,110	1,110	1,303
Return for owner's equity	31	-678	-110	3,756
Percentage return on total investment	2.60	1.03	2.42	11.04
Percentage return on owner's equity	.12	-2.87	-0.48	15.08

As will be noted from the figures in Table 26 there was considerable struggle during the years 1922, 1923 and 1924 to make a return on the investment. The indebtedness was growing and the owner's



equity was getting smaller each year. By the end of 1924 it was decided that something drastic must be done in an effort to increase the income and accordingly a small band of sheep was purchased to run in connection with the cattle. Some additional pasture was leased, some hay had to be purchased and more labor hired. Altogether the venture seemed somewhat risky. Careful management of both cattle and sheep resulted in good calf and lamb crops and this, coupled with the somewhat better cattle values in the fall of 1925, turned the tide and showed a fair return on the investment for that year.

The marketing practice on this ranch consists of selling most of the steers as yearlings with a few held back and sold as two-year-olds. No calves are sold and no heifers except a few two-year-olds that are not deemed good enough to turn into the breeding herd. Fat cows are sold and no old cows are kept in the herd.

The heifers on this ranch are bred to calve as three-year-olds, 24 cows per bull are run and bulls kept in cow herd from June 1 to January 15. Bulls are traded with neighboring ranches to get five to six years' use of them.

This ranch illustrates the advantage of having more than one important source of income. The best of management seldom can result in large profits as long as prices are low on the only product offered for sale.

## CONCLUSIONS

In the development of this analysis no attempt has been made to devise a standard ranch organization. A study of the ranch business as represented by this group will demonstrate clearly that there is a wide variation in the selection and combination of the factors of production. With a limited number of ranches in a given region it is therefore a difficult matter to find a group sufficiently large to make it worthwhile to outline an organization which might have suggestive value and rather wide application for these specific units. Furthermore, the men who operate these ranches differ greatly in their individual abilities and in the resources which are at their command. It would appear therefore that each individual operator should be able to obtain the maximum results by adapting the best practices and the most successful organization to his own conditions rather than to attempt to model his plant on the basis of a standard which has been formulated merely by combining the best features of many ranches into an ideal which cannot at best be applied to more than a few cases.



Each ranch operator with whom we have come in contact during the period of this study has been and is ever striving toward perfection in ranch practice and organization with financial success as the ultimate goal. This study is presented for the purpose of helping cattlemen to accomplish this objective. It does not seek to promote new and untried methods.

There are certain factors in ranch operation and organization that have a very direct bearing upon the annual returns from the business. These factors may be considered as measures of efficiency. It has been found that ranch profits are modified and controlled by such factors as (a) size of ranch; (b) efficiency in the use of labor; (c) care of herds to secure good wintering; (d) taking necessary precautions to secure a good calf crop; and (e) economy of operation with persistent work on the part of the operator.

In making a comparison of the individual ranch with the results reported in this analysis the reader may discover that his business fails to measure up to the best organizations in this list and by following the matter further he finds that his organization is deficient in one or more of the factors mentioned.

If these deficiencies are corrected it should be possible to improve the ranch income quite appreciably over and above the results which are being obtained to date.