Bulletin 327 January, 1928

A STUDY OF RANCH ORGANIZATION IN EASTERN COLORADO

By

R. T. BURDICK
Department of Economics and Sociology, Colorado Experiment Station

MARTIN REINHOLT
Division of Farm Management and Costs

G. S. KLEMMEDSON
Division of Farm Management and Costs, Bureau of Agricultural Economics

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
ECONOMICS SECTION
FORT COLLINS
1928

The Colorado Agricultural College

FORT COLLINS, COLORADO

THE STATE BOARD OF AGRICULTURE

J. C. BELL.....Montrose
W. I. GIFFORD.....Hesperus
H. B. DYE.....Manzanola
JAMES B. McKELVEY.....La Jara
A. A. EDWARDS, Pres..Fort Collins
J. S. CALKINS.....Westminster
E. R. BLISS.....Greeley
MARY ISHAM .....Brighton

Ex-Officio { GOVERNOR W. H. ADAMS
PRESIDENT CHAS. A. LORY

L. M. TAYLOR, Secretary
G. A. WEBB, Treasurer

OFFICERS OF THE EXPERIMENT STATION

CHAS. A. LORY, M.S., LL.D., D.Sc.....President
C. P. GILLETTE, M.Sc.....Director
L D CRAIN, B.M.E., M.M.E.....Vice-Director
L. M. TAYLOR.....Secretary
ANNA T. BAKER.....Executive Clerk

STATION STAFF AGRICULTURAL DIVISION

C. P. GILLETTE, M.S., D.Sc., Director.....Entomologist
WM. P. HEADDEN, A.M., Ph.D., D.Sc.....Chemist
G. H. GLOVER, M.S., D.V.M.....Veterinarian
W. G. SACKETT, Ph.D.....Bacteriologist
ALVIN KEZER, A.M.....Agronomist
GEO. E. MORTON, B.S., M.L.....Animal Husbandman
E. P. SANDSTEN, M.S., Ph.D.....Horticulturist
B. O. LONGYEAR, B.S., M.F.....Forestry Investigations
I. E. NEWSOM, B.S., D.V.S.....Veterinary Pathologist
L. W. DURRELL, Ph. D.....Botanist
RALPH L. PARSHALL, B.S.....U. S. Irrig. Eng. Irrigation Investigations
R. E. TRIMBLE, B.S.....Asst. Irrig. Investigations (Metecrology)
EARL DOUGLASS, M.S.....Associate in Chemistry
MIRIAM A. PALMER, M.A., M.S.....Delineator and Associate in Entomology
J. W. ADAMS, B.S., Cheyenne Wells.....Assistant in Agronomy, Dry Farming
CHARLES R. JONES, B.S., M.S., Ph.D.....Associate in Entomology
CARL ROHWER, B.S., C.E.....Associate in Irrigation Investigations
GEORGE M. LIST, B.S., M.S.....Associate in Entomology
E. J. MAYNARD, B.S.A., M.A.....Associate Animal Husbandman
W. L. BURNETT.....Rodent Investigations
FLOYD CROSS, D.V.M.....Associate Veterinary Pathologist
J. H. NEWTON, B.S.....Associate in Entomolcgy
*JOHN L. HOERNER, B.S., M.S.....Assistant in Entomology
J. W. TOBISKA, B.S., M.A.....Associate in Chemistry
C. E. VAIL, B.S., M.A.....Associate in Chemistry
DAVID W. ROBERTSON, B.S., M.S.....Associate in Agronomy
I. G. KINGHORN.....Editor
R. A. McGINTY, B.S., A.M.....Associate in Horticulture
L. A. MOORHOUSE, B.S.A., M.S.....Rural Economist
R. T. BURDICK, B.S., M.S.....Associate in Rural Economics
B. F. COEN, B.L., A.M.....Associate in Rural Sociology
CHAS. N. SHEPARDSON, B.S., M.S.....In charge of Official Testing
J. C. WARD, B.S., Rocky Ford.....Soil Chemistry
J. W. DEMING, B.S.A.....Assistant in Agronomy
*H. B. PINGREY, B.S.....Assistant in Rural Economics
IDA WRAY FERGUSON, R.N.....Assistant in Bacteriology
DWIGHT KOONCE, B.S.....Assistant in Agronomy
E. A. LUNGREN, B.S., M.S.....Assistant in Plant Pathology
CHARLES F. ROGERS, A.B., M.S.....Assistant in Botany
ANNA M. LUTE, A.B., B.Sc.....Seed Analyst
E. L. LeCLERG, B.S., M.S.....Assistant in Plant Pathology
HERBERT C. HANSON, A.B., A.M., Ph.D.....Associate in Botany
CARL METZGER, B.S., M.S.....Assistant in Horticulture
MARJORIE W. PETERSON, B.A., M.S.....Home Economics Investigations
RICHARD V. LOTT, B.S., M.S.....Assistant in Horticulture
HENRY L. MORENCY, Ph.B., M.S., D.V.M.....Assistant in Veterinary Pathology
D. N. DONALDSON, B.S., M.S.....Assistant in Marketing
CHAS. H. RUSSELL, B.S.....Agent, U. S. D. A., Rural Economics
RUDGER H. WALKER, B.S., M.S., Ph.D.....Assistant in Agronomy
WALTER S. BALL, B.S., M.S.....Assistant in Botany

ENGINEERING DIVISION

L D CRAIN, B.M.E., M.M.E., Chairman.....Mechanical Engineering
E. B. HOUSE, B.S., (E.E.), M.S.....Civil Engineering
.....Assistant in Civil Engineering
CHARLES A. LOGAN, B.S.A.....Assistant in Mechanical Engineering

* On leave, 1927-28

RANCH ORGANIZATION IN EASTERN COLORADO

SUMMARY

The 22 ranches included in this study ranged in size from 3.5 to 108 sections. About two-thirds of the area was leased land, the balance owned. Leased land cost, on the average, $ .12 per acre; owned land and improvements were valued at $8.46 per acre. The average investment was about $98,000 and a little over one-third of this was covered by indebtedness.

Cattle was the chief source of income, only one man securing over 50 percent of his income from other sources.

Feed, leases, taxes and labor were the heaviest items of ranch expense. On some ranches taxes required one-fourth of the cash income. Ten men failed to secure large enough cash incomes to meet all expenses. Several of these men were forced out of the cattle business during the period of the study. Earnings on the whole were low, the average for all ranches being 2.39 percent on the investment.

Sale prices of cattle ranged below $5.00 per hundredweight for the period with the exception of some classes. Yearling steers brought $6.83 per hundredweight which was the highest for any class of cattle.

Ranch expenses that had to be met from cattle sales averaged $6.34 per head of cattle other than calves. Interest paid and 6 percent on owners' equity added to this brought the total per head up to $12.55. Death loss and depreciation per head in the breeding herd was $3.87, bringing the total for the breeding herd up to $16.42 per head.

More money was made on the ranches selling yearling and two-year-old cattle than on those selling calves and aged steers.

Winter feed costs were about $2.00 per head for cows and yearlings and nearly $5.00 for bulls. The use of $1.75 extra winter feed increased the percentage calf crop by nine percent. The average calf crop for all ranches was 56 percent.

Acknowledgment is made to Mr. V. V. Parr of the Bureau of Animal Industry, United States Department of Agriculture, for valuable assistance and suggestions thruout the study as well as for aid in assembling the material in final form. Credit is due Mrs. R. W. Ihmsen who so ably checked and tabulated the records secured. The authors are especially indebted to the cattlemen who extended such hospitality and friendly cooperation toward the field representative and so willingly gave him the information pertaining to their ranch organization and practices upon which this publication is based.

Varying the number of cows per bull from 25 to 50 had no direct relationship to percent calf crop. Feed conditions, character of range and control of herds were more important.

Cows were kept in the breeding herd about five years and bulls about four years.

One man cared for about 660 head of cattle on the average, the highest was 1019. Ranches handling over 600 head per man made more money than those handling less than 600 head. Large ranches made more money than small ranches.

From 1922 to 1924 profits decreased. In 1925 prices were better and better incomes were secured.

Individual ranches made money thruout the entire period. Chief among the reasons for success were the size of ranch; efficiency in use of labor; care of herds to secure good wintering and calf crops; selling one and two-year-old steers rather than calves; economy in operation, coupled with hard work on the part of the owner.

INTRODUCTION

Ranching has always been the pioneering agriculture of the United States. As fast as man has pushed the boundaries of civilization westward, range cattle production has started on the advance line of this development. We are in a stage of agricultural adjustment now where the early type cattle ranch, which consisted of ownership of a headquarters and extensive use of the free range, is pushed clear out of the picture. Acquirement of land is crowding the open range on all sides. Crop culture is decreasing the acreage of grazing lands.

For example, in the three plains counties of Baca, Cheyenne and Lincoln, there were 332 farms listed by the United States Census in 1900. They occupied 8.1 percent of the land area of the three counties. In the 1925 census these same counties show 3,610 farms which occupy 54.4 percent of the land area of these counties. In 1900 the farms listed by the census in these three counties were, for the most part, headquarters for cattle ranches.

In 1925 most of the farms were producing crops as well as livestock and fences were everywhere. In 1925 Baca County had, in the order named, wheat, sorghum and corn as the leading crops; Cheyenne County had corn, wheat and sorghum; Lincoln County had corn, wheat and beans. Barley was fourth in acreage in all these counties.

In addition to these long-time adjustments in farming which in many instances bore heavily upon the cattlemen, the cattle industry, following the world war, entered into one of the most disastrous per-

iods of depression ever experienced on the range in the memory of the present generation. Cattle prices shrank to one-half or even one-third or less of their war time value within a period of several months. This abrupt drop in prices, following the war period threw the cattle industry into chaos. Men who had borrowed to increase their herds during war time found now that a high percentage of their income was needed to pay interest. In many instances loans exceeded the market value of their cattle. Labor was cut. Repairs and maintenance of buildings, fences and equipment came practically to a standstill. Economy was the rule. Yet in spite of every effort many cattlemen failed, either by forclosure or bankruptcy, or by selling out and quitting the business. Losses were enormous.

In 1922 when this period of readjustment was in its initial stage the United States Department of Agriculture started cooperative projects in the western states to study range cattle production with special interest in ranch organization and management and economic factors influencing production.

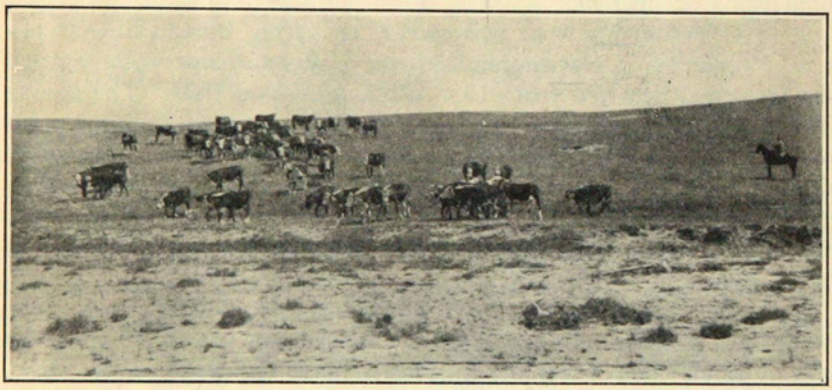
In Colorado this work was carried on by the Bureau of Agricultural Economics in cooperation with the Colorado Experiment Station and extended thru the years 1922, 1923, 1924 and 1925. The results of this study are shown in part in the following pages. It is the opinion of men most intimately acquainted with the ranches included in this report that the study will be of primary importance in showing what took place when the industry was running on short shift and at the minimum upkeep expense, recognizing that these conditions were not normal.

However, even under these desperate circumstances some men were able to make money. There were wide variations in operation costs. Some men were able to weather adversity better than others. The experience gained during this four-year period should prove helpful in future years as a basis of comparison, and as an incentive to consideration of economic factors in range cattle production. It is with this in mind that the records are presented to the public.

DESCRIPTION OF THE DISTRICT

CLIMATE.—Colorado bulletin 245 gives the average yearly rainfall up to the year 1917 for Cheyenne Wells, 16.46 inches; for Hamps, Elbert County, 14.42 inches; for Hoehne, Las Animas County, 14.08 inches; and Rocky Ford, 12.67 inches.

While these represent average figures for periods of fifteen years or more, still there are wide variations in the yearly rainfall. For example, at Cheyenne Wells, the range during the period covered by the above average was from a low rainfall of 9.72 inches to a maximum of 25.36 inches. At Rocky Ford the range was from 6.93 inches to 18.75 inches. These extreme variations in yearly rainfall together with a relatively low long-time average rainfall have produced the vegetation which is characteristic of the plains. They have also rendered it extremely hazardous to count on sufficient rainfall each year for profitable crop production.



Much prairie land is better adapted to grazing than to crops

2. SOIL AND VEGETATION.—Bureau of Plant Industry, Bulletin 201, gives an excellent analysis of the soil and vegetation associations which are common to the Great Plains with special reference to eastern Colorado. The following paragraphs from this bulletin briefly summarize the more important plant associations in eastern Colorado.

SHORT GRASS.—The two important grasses in this vegetation are gramma and buffalo. These grasses have the ability to dry out and then revive quickly when water is again supplied. The soil associated with short grass is usually a loam of the type known as "hard land." This ground is very hard and much water runs off from the surface and is lost. The soil rarely shows moisture below a depth of two feet. Water loss is rapid by direct evaporation. Rainfalls which wet

the surface a few inches cause these shallow rooted grasses to revive immediately and grow. Overgrazing of these short grasses usually causes unpalatable plants to increase.

WIRE GRASS.—Wire grass indicates a soil which is not as heavy as the loam of the short grass associations. This soil forms an excellent seedbed. Water penetrates it comparatively rapidly, almost all being absorbed. It does not blow badly.

BUNCH GRASS.—Bunch grass indicates sandy land. This soil is not especially rich in plant food but it holds all of the rainfall and permits the growth of the deeper rooted bunch grass. This land blows badly when plowed.

In wet years the short grass land gives the greatest crop yields but it also has the most crop failures caused by July drouths. Early maturing crops seem best for this type of soil. The bunch grass, sandy lands yield best in dry years while the wire grass areas are somewhat intermediate and are considered by old settlers to be the best for general agricultural purposes. Crops will mature on this land under rainfall conditions that burn up the crops on the short grass soils. The limitations of crop production on these various soils are problematical and will be governed largely by crop adaptations and cultural practices. It is improbable, however, that for the present we can afford to overlook the economic utilization of the grazing lands as the best available method to utilize and conserve these plains soils.

The majority of the ranches included in this study are located in short grass regions. Crop production on these lands on the whole should be kept secondary to grazing as short grass is particularly adapted to grazing. It has the disadvantage, however, of furnishing almost no feed in dry years. With the normal tendency to overstock the range this results in heavy losses or large feed bills in dry years. Sometimes cattle are driven out in dry years to seek better pastures. But this cattle movement at present in no way approaches the great herd movements of the early cattle ranching days as fenced land interferes with the former free travel of livestock.

NUMBER OF RANCHES STUDIED

Twenty-two individual ranches were studied during the four years. Six of these men kept records all four years. Four more kept records three years, ten men were studied two years and two men were included one year only. Several men who started keeping records in 1922 went out of the cattle business before the end of the study. Other cattlemen were found to take their places. The largest number of ranches included in the study for any one year was 16, altho 22 individual ranches are included. Table 11, Page 22, shows for each ranch the years' records that were included.

ORGANIZATION

SIZE OF RANCHES.—Table 1 shows the total area of owned and leased land for each ranch for the period studied. Ranch 49 owned 96.7 percent of its land, while ranch 45 leased 97.1 percent of its land. The average for all ranches shows approximately one-third the area owned and two-thirds leased.

These ranches include in their number representatives of typical ranches for the area studied. The smallest ranch had 2,240 acres or three and one-half sections. The largest ranch had 69,225 acres or over 108 sections, an area equivalent to more than 10 miles square. The average size for all ranches was 19,071 acres or approximately 30 sections.

Practically no free range was available to these men during the period of this study. Ranch 60 had quite a little free range, the extent of which it was difficult to measure accurately. As will appear in later tables the operator of this ranch kept about four times as many cattle compared to his reported area as normal. This would suggest that the amount of free range in his case could be at least 10 sections. (Note: In this and subsequent tables, unless otherwise stated, the ranches have been arranged from largest to smallest and the average used is a weighted average.)

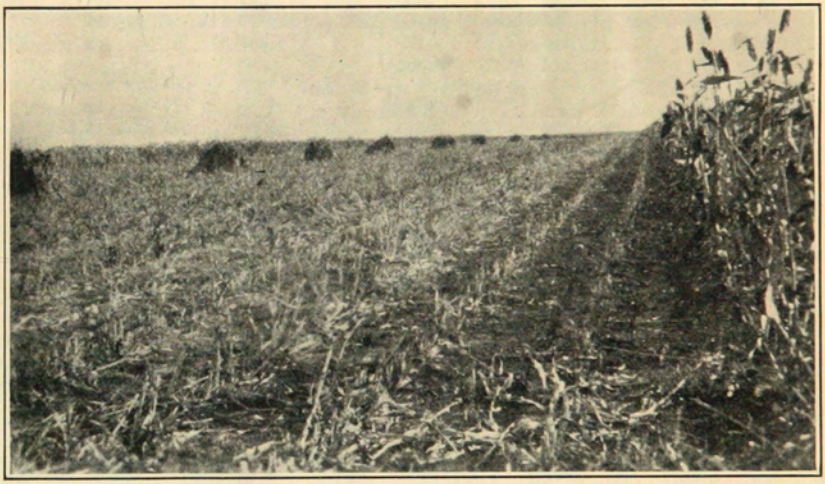
Table 1.—Size of Ranches: Average for Period Studied

Ranch No.	Years Studied	Total Acres	Acres Owned	Acres Leased	Percent Owned	Percent Leased
32	4	69,225	13,575	55,650	19.6	80.4
18	4	52,570	13,360	39,210	25.4	74.6
49	3	38,280	37,000	1,280	96.7	3.3
52	3	25,290	9,000	16,290	35.6	64.4
21	2	19,940	1,940	18,000	9.7	90.3
5	4	16,223	2,000	14,223	12.3	87.7
4	2	13,510	720	12,790	5.3	94.7
57	2	12,090	2,535	9,555	21.0	79.0
8	2	11,940	8,580	3,360	71.9	28.1
45	1	10,899	320	10,579	2.9	97.1
9	2	10,600	3,080	7,520	29.1	70.9
44	3	10,267	4,507	5,760	43.9	56.1
46	1	9,381	1,740	7,641	18.5	81.5
28	4	9,120	1,840	7,280	20.2	79.8
6	4	8,600	960	7,640	11.2	88.8
17	3	8,287	3,647	4,640	44.0	56.0
55	2	7,722	4,100	3,622	53.1	46.9
56	2	7,100	3,600	3,500	50.7	49.3
41	4	6,440	2,080	4,360	32.3	67.7
58	2	5,880	4,600	1,280	78.2	21.8
59	2	4,360	1,120	3,240	25.7	74.3
60	2	2,240	1,920	320	85.7	14.3
Av.	58	19,071	6,279	12,792	32.9	67.1

USE OF LAND.—Practically all the land was grazed. Table 2 shows for the average only 187 acres in hay or crops while 18,884 acres were grazed. The largest area of crops was on ranch 8 with 670 acres. Two ranches, 21 and 46, had no crop land.

The area in hay and crops was practically all used for the production of forage. Three ranches, 5, 41 and 58, sold crops to some extent. Their sales were mostly alfalfa seed. The forage crops grown were mostly hay and sorghum.

Individual ranchmen varied considerably in their estimate of the value per acre of their grazing land. The values ranged from about $3 per acre up to $19. These values per acre include land and improvements owned. The average for all ranches was $8.46. The value undoubtedly reflects to some extent high prices paid for land during the war period.



When rainfall is sufficient, feed crops are good

If these ranches are typical of the region it was cheaper during the years 1922-25 to lease land for cattle grazing than to own it, as the average payment for grazing land was only $0.12 per acre and the highest payment per acre for a lease was $0.18 by one man who leased only 3.3 percent of his area.

Twelve cents is only one and one-half percent interest on the average value per acre. It is less than the actual cost of taxes on owned land. It should not be inferred from this comparison that the owners of this leased land are not securing sufficient revenue to pay taxes as most of these lands are owned by the state and no taxes are assessed.

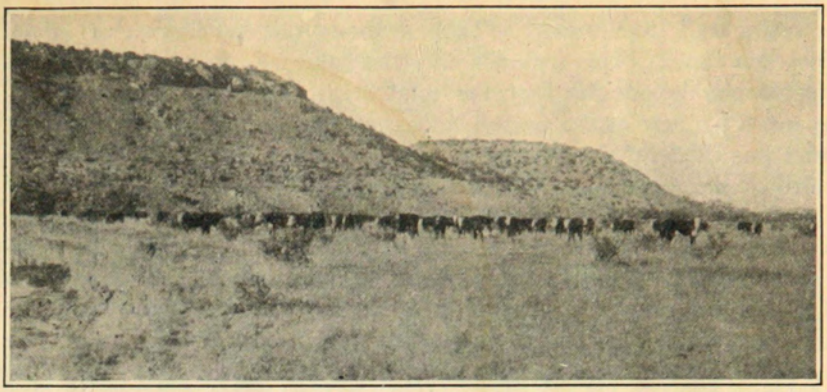
This low payment for leased land reflects the depression in the cattle business. It should be obvious that the land will not continue indefinitely to lease for less than the cost of taxes.

Table 2.—Use of Land: Average for Period Studied

Ranch No.	Area grazed	Area hay and crops	Value per acre owned grazed	Cost per acre leased land
32	69,200	25	$ 3.88	$ .13
18	52,250	320	11.96	.10
49	37,880	400	9.77	.18
52	25,218	72	3.39	.10
21	19,940	...	11.64	.07
5	16,114	109	11.02	.12
4	13,420	90	19.03	.09
57	11,924	166	11.01	.07
8	11,270	670	6.99	.12
45	10,639	360	8.00	.14
9	10,560	40	4.99	.08
44	9,744	523	9.51	.18
46	9,381	...	5.80	.08
28	9,070	50	9.87	.13
6	8,400	200	13.52	.07
17	8,127	160	7.96	.11
55	7,554	168	11.90	.16
56	7,000	100	10.74	.09
41	6,240	200	5.96	.10
58	5,675	205	3.28	.12
59	4,168	192	16.44	.12
60	2,115	125	14.61	.10
Av.	18,884	187	8.46	.12

SIZE OF HERDS.—Table 3 gives the size of herds for each ranch. A study of this table shows some of the variations in practice followed by the different ranchmen. Ranches 32, 52 and 9 show a comparatively large number of aged steers indicating that they held their cattle longer before marketing than did the other ranchmen. Ranches 45, 57 and 6 show no two-year old steers or older. These men disposed of their cattle at an early age.

The total head of cattle, except calves, as given represents a measure of size of herds most commonly used by cattlemen. The largest herd on any ranch was 4,527; the smallest, 195; the average for all ranches was slightly over 1000 head of cattle. About one-half of these ranches show two-year-old heifers. On the other ranches the two-year-old heifers are included with the cows in the breeding herd.



Cliffs along the river bottoms afford excellent shelter for cattle

Table 3.—Size of Herds: Average Number of Each Class for Period Studied

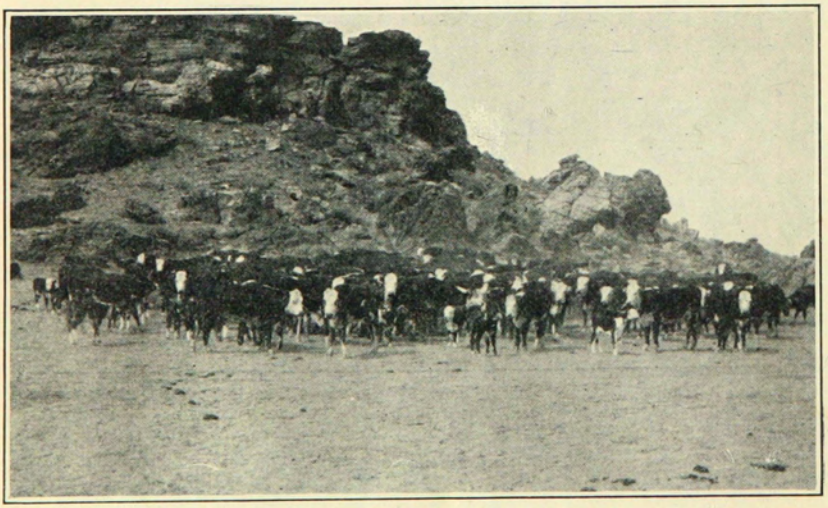
Ranch No.	Total except				Yearling		Two-year-old		Aged steers
	Calves	calves	Cows	Bulls	Heifers	Steers	Heifers	Steers	
32	920	4,527	1,904	53	430	442	388	409	901-
18	918	2,230	1,346	43	372	149	266	45	9
49	1,013	2,266	1,419	58	351	179	247	12	...
52	210	1,374	470	29	113	176	110	220	256
21	212	426	390	12	...	16	...	8	...
5	236	736	510	19	116	14	75	2	...
4	203	828	383	11	124	94	124	92	...
57	155	436	261	11	78	30	56	...	...
8	210	446	361	7	36	17	...	25	...
45	207	588	328	10	150	100	...	...	...
9	240	760	470	8	88	86	...	29	79
44	117	702	254	7	52	157	...	204	28
46	163	435	275	11	70	52	...	27	...
28	158	349	228	7	65	43	...	6	...
6	211	416	341	10	56	9	...	...	...
17	202	621	324	14	109	88	85	1	...
55	126	420	136	4	67	82	62	68	1
56	119	195	159	6	10	12	...	4	4
41	61	218	130	3	32	31	...	18	4
58	68	311	97	2	26	84	...	102	...
59	66	203	91	3	42	39	...	28	...
60	136	554	286	8	78	82	...	76	24
Av.	312	1,016	537	18	129	100	81	71	80

CAPITAL INVESTMENT.—Table 4 shows the distribution of capital for each ranch. This includes only the value of owned land which is approximately one-third of the total area. If leased land is worth as much per acre as the owned land, then approximately $100,000 more land was used for the average ranch than shows in table 3. Over one-third of the total investment was in cattle.

There is considerable variation in the distribution of ranch investment. Ranch 44 had approximately one-sixth of the total investment in buildings and improvements. Ranch 52, with more area than 44, had less than one-third as great an investment in improvements. The smaller ranches had a greater proportion of their total investment in improvements.

The investment in equipment was small, the largest being on ranch 18 with $3,000. The small ranches required practically as much equipment as the large ranches. The investment in cattle, on the whole, varied with the size of ranch.

The values used in arriving at the investment in range cattle were fairly uniform for the four-year period. There was some variation between individual ranches in their estimate of the value of the different classes of cattle, but the value on any individual ranch was kept practically constant for the period of the study. The values most commonly used would come within the following figures: For cows, from $35 to $40 per head; bulls, $90 to $110; yearling heifers, $20 to $25; two-year-old heifers about $30; yearling steers about $25; two-year-old steers, $35 to $40; aged steers, from $45 to $55.



A feed yard near rock shelter

Table 4.—Distribution of Capital Invested in Ranching: Average for Period Studied

Ranch No.	Total investment	Value land	Value improvements	Value equipment	Range cattle	Other livestock	Total debt	Net worth
	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
32	216,072	44,661	8,465	1,860	159,771	1,315	26,157	189,915
18	254,225	148,233	11,524	3,000	89,155	2,313	75,327	178,898
49	459,810	344,213	25,184	2,748	86,193	1,472	190,671	269,139
52	76,457	26,650	3,947	873	44,342	645	36,954	39,503
21	42,230	11,900	10,687	484	18,200	959	18,000	24,230
5	70,293	32,322	7,399	928	28,433	1,211	9,125	61,168
4	49,838	8,540	7,032	1,224	32,525	517	22,000	27,838
57	48,562	19,929	9,992	1,119	17,022	500	11,864	36,698
8	[1] 87,215	56,210	8,280	1,710	18,545	2,345	64,300	22,915
45	29,098	2,560	.....	2,473	22,160	1,905	46,000	-16,902
9	49,449	12,450	2,926	1,234	30,892	1,947	26,584	22,865
44	79,348	33,076	12,188	2,205	25,658	6,221	62,434	16,914
46	23,151	5,220	4,873	178	12,680	200	850	22,301
28	32,710	12,827	5,331	310	13,913	329	8,562	24,148
6	32,357	11,474	2,761	578	16,964	580	11,719	20,638
17	63,677	25,616	5,335	2,879	29,062	785	10,632	53,045
55	65,290	43,614	5,435	1,529	14,237	475	23,000	42,290
56	48,139	37,842	1,740	96	8,108	353	.....	48,139
41	[2] 42,010	26,240	4,812	1,336	7,694	1,878	3,844	38,166
58	31,922	13,737	4,774	1,643	10,368	1,400	14,488	17,434
59	27,872	14,884	3,060	1,852	7,095	981	5,946	21,926
60	51,137	24,669	4,051	1,102	20,390	925	32,681	18,456
Av.	[3] 98,002	49,776	7,275	1,462	38,088	1,383	33,200	64,802
Pct. of total investment	100	50.8	7.4	1.5	38.9	1.4	33.9	66.1

[1] Includes $125 feed.
[2] Includes $50 feed.
[3] Includes $8 feed.

Table 5.—Distribution of Ranch Indebtedness: Average for Period Studied

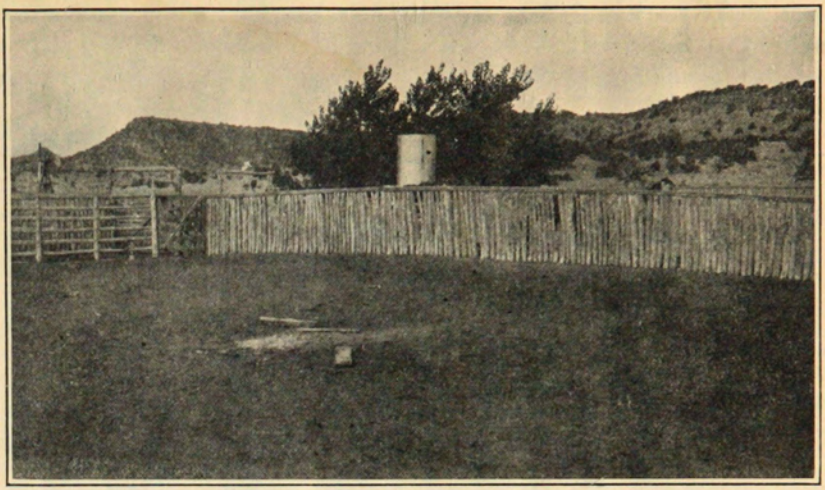
Ranch No.	Total indebtedness	Land debt	Cattle debt
32	$ 26,157	$ 17,040	$ 9,117
18	75,328	33,501	41,827
49	190,671	116,667	74,004
52	36,954	21,064	15,890
21	18,000	.....	18,000
5	9,125	1,075	8,050
4	22,000	6,800	15,200
57	11,863	7,788	4,075
8	64,300	43,800	20,500
45	46,000	.....	46,000
9	26,584	1,250	25,334
44	[1] 62,434	17,024	43,867
46	850	850	.....
28	8,562	.....	8,562
6	11,718	6,000	5,718
17	10,632	1,958	8,674
55	23,000	5,057	17,943
56	.....	.....	.....
41	[2] 3,844	.....	3,464
58	14,488	11,734	2,754
59	5,946	4,100	1,846
60	32,681	10,681	22,000
Av.	[3] 33,200	15,239	17,855

[1] Includes $1543 debt on dairy cattle
[2] Includes $380 debt on sheep
[3] Includes $106 debt on other than land and cattle

RANCH INDEBTEDNESS.—The 1925 census shows that in the counties where these ranches are located, the owner farms reporting a mortgage debt had more than one-third of their real estate covered by mortgage as follows:

County	Ratio of mortgage debt to real estate value
Pueblo	43.7 percent
Las Animas	39.1 percent
Baca	38.6 percent
Otero	38.5 percent
Cheyenne	33.4 percent
Lincoln	31.0 percent

The census does not report cattle debts. The reported debts on these ranches represented about one-third of the total investment, or less than the census figures.



Headquarters are located at the foot of hills where possible

Table 5 shows this debt was nearly evenly divided between land and cattle, $15,239 being the average debt on land and $17,855 on cattle.

With this heavy indebtedness it took nearly one-fourth of the total cash income to pay interest. With another 10.9 percent of the income required to pay taxes, or over one-third for these two fixed expenses, it requires little imagination to picture the fact that the cattlemen were having hard sledding.

Some of these ranchmen were very heavily in debt. One ranch had nearly $17,000 more indebtedness than total investment. This was due to excessive borrowing when cattle were high in price. This ranch record was obtained for only one year. The rancher was unable to pay the interest on his debts in 1923. The next year he changed from breeding cattle to steers and dropped out from this study.

RANCH RECEIPTS.—Table 6 shows how prominent a place cattle held on these ranches. Over 90 percent of all receipts were from cattle sales and most of the balance of receipts came from increased inventory of cattle.

Taking yearly receipts of $700 from any one product as indicating that the product was of considerable importance on that ranch, an analysis of table 6 shows that there were only six instances of such sales of any product other than cattle. Three were sales of other livestock, one of livestock products, and two were crop sales. Four of these were on two ranches so that the averages show only four ranches

out of the twenty-two that had over $700 income from any one source other than cattle. Ranch 41 was the only one with less than 50 percent of the income from cattle.

Table 6.—Source of Ranch Receipts: Average for Period Studied

Ranch No.	Total receipts	Cash receipts				Receipts from increased inventory	
		Cattle	Other stock	Stock products	Crops	Cattle	Other stock
32	$39,201	$20,804	$ ...	$ 23	$....	$18,374	$...
18	24,137	24,087	50	...	....	.....	...
49	29,606	29,209	356	41	....	.....	...
52	19,425	19,094	...	...	....	331	...
21	6,484	5,055	...	...	....	1429	...
5	9,366	8,064	138	...	1,164	.....	...
4	8,584	8,584	...	...	....	.....	...
57	4,427	4,214	...	...	....	213	...
8	7,676	6,171	755	...	....	750	...
45	7,502	1,860	504	...	....	5,138	...
9	4,082	4,014	60	...	....	.....	8
44	11,828	6,597	1,737	760	71	2,592	71
46	4,766	3,726	...	...	....	1,040	.
28	5,575	3,469	...	...	54	2,052	...
6	3,961	3,961	...	...	....	.....	...
17	7,121	7,117	2	2	....	.....	...
55	6,665	5,436	8	15	....	1,168	38
56	2,727	2,543	77	75	....	.....	32
41	4,247	2,051	1,010	383	785	.....	[2] 18
58	8,118	7,732	...	...	287	.....	[2] 99
59	[1] 4,872	4,026	554	232	60	.....	...
60	4,950	4,550	25	375	....	.....	...
Av.	10,942	9,414	251	94	154	1,029	[3]

[1] Includes $9 of miscellaneous cash receipts
[2] Feed
[3] Total for all ranches shows a net decrease in inventory of other stock and feed

RANCH EXPENSES,—Table 7 gives for each ranch the important items of expense. The items of feed, leases, taxes, labor and the purchase of cattle represent the heaviest cash outlay. The item of leases varies widely due to the variation in the amount of land leased as shown in table 1. There is considerable variation in the amount of feed purchased. Some of the men grow a much larger proportion of their feeds than do others.

Several of the men included in this study purchased herds of cattle from their neighbors. This brings the expense for cattle purchased to a higher figure than would be the case if they were simply buying cattle for replacements. There were six men who did not buy

Table 7.—Distribution of Ranch Expenses: Average for Period Studied

Ranch No.	Total expense	Cash Expenses						Livestock purchased			Other Expenses		
		Feed and salt	Leases	Taxes	Labor	Repairs	Auto and misc.	Bulls	Other cattle	Other stock	Depr. Equip. bldgs.	Decr. inventory Cattle	Decr. inventory Feed and other stock
32	$21.432	$1,152	$7,158	$1,747	$2,697	$157	$ 411	$ 86	$7,503	$ 30	$ 439	$ ..	$ 52
18	16,141	2,741	3,935	2,084	3,211	539	797	338	..	..	1,090	1,023	383
49	23,987	6,265	234	7,342	4,426	679	1,323	957	..	36	1,166	1,507	152
52	13,565	1,459	1,603	904	207	29	216	297	8,505	36	231	..	78
21	7,482	331	1,280	450	964	194	257	925	2,741	..	302	..	42
5	8,313	797	1,666	414	832	47	318	162	26	88	350	3,337	276
4	7,576	1,224	1,103	513	631	30	388	150	..	..	298	3,090	151
57	2,628	627	711	320	108	42	96	298	..	..	317	..	109
8	7,778	76	474	1,297	3,595	394	938	188	40	46	559	..	171
45	6,531	1,322	1,529	337	1,350	325	551		..	..	397	..	720
9	4,138	523	632	971	1,098	25	298		..	60	199	332	..
44	10,839	1,611	1,140	919	860	106	431	83	4,163	598	715	..	213
46	4,882	1,037	611	191	2,566	..	145		..	..	302	..	30
28	3,372	451	978	407	790	100	156	219	..	13	209	..	49
6	2,665	402	566	153	472	16	256	138	..	15	224	315	108
17	8,739	322	488	726	2,632	263	866		926	..	469	1,953	94
55	5,405	796	654	620	1,368	84	229		958	100	506	..	90
56	2,299	410	300	642	200	17	30	113	37	63	44	423	20
41	3,878	59	445	366	1,249	30	517	60	..	25	402	436	289
58	5,348	125	158	528	147	84	98	25	2,750	..	403	882	148
59	5,000	485	377	286	534	150	485	14	393	..	350	1,527	399
60	2,338	742	32	347	41	12	210	..	..	..	409	375	170
Av.	7,953	1,111	1,430	1,083	1,425	158	433	192	1,461	56	450	[1]	154

[1] Av. for all ranches shows an increase.

any bulls during the period included in this study, and exactly one-half, or 11 ranches, did not purchase any other cattle. These purchases of bulls, when considered as an average for the entire group, are not as great as the normal depreciation and death loss on bulls which is a further indication that these men were reducing their expenses as far as possible.

The cash expense for taxes which averages $1,083 for all ranches represents practically 11 percent of the actual cash income for all ranches. Ranch 49 required practically 25 percent of the cash income to pay the excessive tax bill. This rancher owns practically his entire area. There is not, however, a direct correlation on all ranches between the land owned and the cash income required to pay taxes. Ranch 58, for example, owned 78 percent of the land area and paid 6.6 percent of the cash income for taxes. But the group of ranches owning over 40 percent of their land area paid a larger proportion of their income for taxes than was paid by the group owning less than 40 percent of their land area.

CASH RECEIPTS AND EXPENSES.—In tables 6 and 7 the analysis of receipts and expenses includes some items which are not cash such as depreciation and changes in inventory value. Ranchmen are interested in the actual cash receipts and expenses as it is from such a comparison that they measure the results of the year's business. Table 8 summarizes from the previous tables the cash receipts, cash expenses, excluding interest, interest actually paid and the difference or the net cash available for the rancher to live on. Ten of the twenty-two men included in this study did not have enough cash receipts to pay expenses and interest on their indebtedness. The average for all ranches shows $136, net cash to live on.

A brief study of table 8 will show why some of the ranches which started to keep records in 1922 did not continue thru the four-year period. For example, ranches 21, 8, 45, 9 and 46 dropped off from our records at the end of the year 1923. None of these men showed for this period, when their records were available, any net cash to live on. Ranch 32 shows a cash loss, but as shown in table 6 this operator was building up his cattle inventory during this period, so that his total income, together with his comparatively low indebtedness at the beginning of the period, kept him in the running.

Ranch 49 was in good enough position at the beginning of the period so that he also weathered the unfavorable prices, altho it is obvious that a few more years at the rate shown in this study would have forced him to liquidate. Some of the other ranches that had been steadily losing money were in grave danger at the close of this study.

Table 8.—Net Available Cash: Average for Period Studied

Ranch No.	Cash receipts	Cash exp. excl. int.	Paid int.	Total cash expense	Net cash to live on
32	$20,827	$20,941	$ 1,821	$22,762	$ —1,935
18	24,137	13,645	5,273	18,918	5,219
49	29,606	21,162	13,923	35,085	—5,479
52	19,094	13,256	2,480	15,736	3,358
21	5,055	7,138	1,260	8,398	—3,343
5	9,366	4,350	718	5,068	4,298
4	8,584	4,037	2,200	6,237	2,347
57	4,214	2,202	707	2,909	1,305
8	6,926	7,048	5,144	12,192	—5,266
45	2,364	5,414	3,520	8,934	—6,570
9	4,074	3,607	1,969	5,576	—1,502
44	9,165	9,911	4,384	14,295	—5,130
46	3,726	4,550	51	4,601	— 875
28	3,523	3,114	685	3,799	— 276
6	3,961	2,018	953	2,971	990
17	7,121	6,223	795	7,018	103
55	5,459	4,809	1,840	6,649	—1,190
56	2,695	1,812	...	1,812	883
41	4,229	2,751	307	3,058	1,171
58	8,019	3,915	852	4,767	3,252
59	4,872	2,724	413	3,137	1,735
60	4,950	1,384	2,347	3,731	1,219
Av.	9,913	7,349	2,428	9,777	136

Many ranch improvements are constructed of local material

RANCH INCOME.—Table 9 summarizes the figures in tables 6 and 7 to show the percent return on the owner's equity and on the total investment for each ranch. Some of the ranches with a net cash loss, as shown in table 8, notably Nos. 32 and 28, had increases in inventory which offset their cash losses so that for the business as a whole they show return on their investment. Ranch 49 shows a one percent return on the total investment. But this one percent on the total investment is not sufficient to pay the actual interest on his indebtedness, leaving him a large loss on his equity. On eight ranches there was no return for the use of the investment as a whole, while on thirteen ranches there was no return to the owner for his equity. The average for all ranches shows a slight loss on the owner's equity but a return of practically 2.4 percent on the entire investment. The heavy interest payments, which average a little over $2400 per ranch, are the direct cause of this state of affairs. Practically one-fourth of the ranch income as shown in table 8 is required to pay interest on indebtedness. On only six ranches was the payment for interest on indebtedness less than 10 percent of the cash income.

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	Pct. on owner's equity	Pct. return total invest.
32	$39,201	$21,432	$17,769	$ 600	$17,169	$ 1,821	$15,348	8.08	7.95
18	24,137	16,141	7,996	600	7,396	5,273	2,123	1.19	2.91
49	29,606	23,987	5,619	942	4,677	13,923	—9,246	—3.43	1.02
52	19,425	13,565	5,860	1,800	4,060	2,480	1,580	4.00	5.31
21	6,484	7,482	—998	...	—998	1,260	—2,258	—9.32	—2.36
5	9,366	8,313	1,053	1,000	53	718	— 665	—1.09	.08
4	8,584	7,576	1,008	480	528	2,200	—1,672	—6.01	1.06
57	4,427	2,628	1,799	705	1,094	707	387	1.05	2.25
8	7,676	7,778	—102	...	—102	5,144	—5,246	—22.89	—.12
45	7,502	6,531	971	720	251	3,520	—3,269	...	.86
9	4,082	4,138	— 56	360	—416	1,969	—2,385	—10.43	—.84
44	11,828	10,839	989	1,400	—411	4,384	—4,795	—28.35	—.52
46	4,766	4,882	—116	...	—116	51	— 167	—.75	—.50
28	5,575	3,372	2,203	540	1,663	685	978	4.05	5.08
6	3,961	2,665	1,296	480	816	953	— 137	—.66	2.52
17	7,121	8,739	—1,618	495	—2,113	795	—2,908	—5.48	—3.32
55	6,665	5,405	1,260	...	1,260	1,840	— 580	—1.37	1.93
56	2,727	2,299	428	960	—532	...	— 532	—1.11	—1.11
41	4,247	3,878	369	22	347	307	40	.10	.83
58	8,118	5,348	2,770	1,260	1,510	852	658	3.77	4.73
59	4,872	5,000	—128	480	—608	413	—1,021	—4.66	—2.18
60	4,950	2,338	2,612	570	2,042	2,347	— 305	—1.65	3.99
Av.	10,942	7,953	2,989	642	2,347	2,428	— 81	—.12	2.39

In table 10 the average ranch return is shown separately for each year. Nineteen hundred twenty-four was the year of lowest returns on these ranches. In 1925 the start had been made toward recovery. This gives an interesting contrast to studies made on irrigated farms in Weld County, Colorado, for the same four years. On these Weld County irrigated farms 1922 was the poorest year, returns steadily improved until 1924, then 1925 was not as good as 1924. In other words the cattle industry was becoming less profitable up to 1924 while irrigation agriculture was recovering. Starting with 1925 the cattle business began to regain its former standing.

Table 10.—Ranch Income by Years: Average for All Ranches

	1922	1923	1924	1925	Average
Number ranches	11	16	16	15	58
Total receipts	12,999	11,110	10,114	13,720	10,942
Total expenses	9,232	8,450	7,998	10,021	7,953
Receipts less expenses	3,767	2,660	2,116	3,699	2,989
Unpaid labor	427	588	743	750	642
Return for investment	3,340	2,072	1,373	2,949	2,347
Paid interest	1,990	2,681	2,457	2,448	2,428
Return for owner's equity	1,350	—609	—1,084	501	—.81
Percent on owner's equity	2.43	—.95	— 1.62	.71	—.12
Percent on total investment	4.11	2.08	1.36	2.81	2.39

Table 11 shows the details of the percentage return on investment for each ranch for each year. This shows that several ranches made less money in 1925 than in 1924 (notably ranches 32, 18, 57 and 58), while the average for all ranches is better in 1925 than in 1924. The year 1923 was the poorest for some ranches (notably ranches 9, 28 and 6). Seven ranches made more in 1925 than in any previous year (49, 52, 28, 6, 55, 59 and 60). Several of these were not included in 1922. Of the six ranches with complete records for four years, two made the best incomes in 1922, two in 1923 and two in 1925.

Bringing in new ranches to replace those dropping out the first two years makes it hard to compare results, yet the average for all ranches agrees closely with opinions held by ranchmen that 1924 was the worst year on the range.

Table 11.—Percent Return on Total Investment by Years

Ranch No.	1922	1923	1924	1925	Average
32	**11.84**	8.76	6.98	5.30	7.95
18	3.90	3.32	2.96	1.48	2.91
49	...	1.03	— .01	2.05	1.02
52	...	6.44	2.25	7.02	5.31
21	—5.10	.56	...	...	—2.36
5	.98	1.08	—1.20	— .66	.08
4	7.60	—5.42	...	...	1.06
57	...	...	3.91	.64	2.25
8	— .96	.74	...	...	— .12
45	...	.86	...	...	.86
9	5.88	—6.76	...	...	— .84
44	...	—1.60	— .22	.24	— .52
46	...	— .50	...	...	— .50
28	4.00	2.98	5.76	7.08	5.08
6	1.25	—1.86	4.74	6.22	2.52
17	.38	2.77	—12.35	...	—3.32
55	...	...	— .14	3.96	1.93
56	...	...	—2.04	— .17	—1.11
41	—.16	2.03	1.21	.25	.83
58	...	...	6.07	3.61	4.73
59	...	...	—5.44	1.13	—2.18
60	...	...	1.94	6.11	3.99
Av.	4.11	2.08	1.36	2.81	2.39

CATTLE PRODUCTION AND SALES

BEEF PRODUCED BY CLASSES.—Table 12 gives the percentage of total beef produced each year by classes of livestock. This analysis is based on actual sale weights and estimated inventory weights. Nearly 60 percent of all the weight comes from the growth of calves. The smaller percentages produced by the two-year old cattle as compared to the yearling cattle is due to the relatively smaller number of animals on hand for the year.

Table 12.—Distribution of Total Beef Produced Each Year

	Percent of total beef produced				
	1922	1923	1924	1925	Average
Calves	62.69	61.01	57.21	50.82	57.89
Yearling heifers	11.42	13.23	12.98	13.12	12.78
Yearling steers	8.94	10.54	10.40	12.30	10.61
Heifers, 2's	6.19	7.25	9.55	6.76	7.52
Steers, 2's	6.64	3.49	7.27	12.23	7.22
Aged steers	4.12	4.48	2.59	4.77	3.98

AVERAGE YEARLY GAINS BY CLASSES.—Table 13 gives the average number of pounds of beef produced per head for the different classes of livestock each year and the average for four years.

The group of aged steers includes all steers three years and older. As shown by the table, steers above three years make practically one-half as much gain per year as the yearling and two-year-old cattle. The gain put on by some classes of cattle in 1924 was less than in the other years. This is partly due to the fact that 1924 was comparatively dry with a resultan short growth of grass which is reflected in somewhat smaller gains.

The gains as a whole shown by table 13 are rather low. One reason for this, in all classes except calves, is the fact that losses of animals are subtracted in showing the actual live weight produced by each class of cattle. In order to show the possible effect of such losses upon the gains, the last column of inventory gains shows what can be expected normally for each class from animals kept an entire year.

Table 13.—Average Pounds Beef Produced Per Head by Classes

Class	1922	1923	1924	1925	Average	Estimated gains
Calves	353	372	347	341	354	354
Heifers, 1's	187	191	186	193	190	205
Steers, 1's	233	217	[2] 166	216	204	208
Heifers, 2's	169	176	182	174	176	189
Steers, 2's	215	168	189	200	194	201
Aged steers	114	115	66	86	94	106

[1] Net pounds of gain divided by average number on hand entire year.

[2] One sale of 100 yearlings in May showed only 10 lbs. per head increase over opening inventory of the year. This reduces the average gain for all for the year. Also a dry year in 1924 gave poorer feed, so less gain.

NUMBER OF CATTLE SOLD.—Table 14 shows the distribution of cattle sales by classes. At the bottom of the table is also shown the percentage of the number sold in each class and the percentage of the total value of such sales for each class. In the case of steers of all ages the percentage of value sold is greater than the percentage of the number sold.

Measured by numbers of animals sold, cows and calves lead the list with yearling steers next, followed by aged steers. The sales of cows and bulls are usually sales of animals that have no further value for breeding purposes. In the sale of growing cattle, however, there is considerable variation among the ranches.

Cattle drifting toward the water hole

Water is the key to the control of grazing land

Table 14.—Number of Cattle Sold by Classes: Average for Period Studied

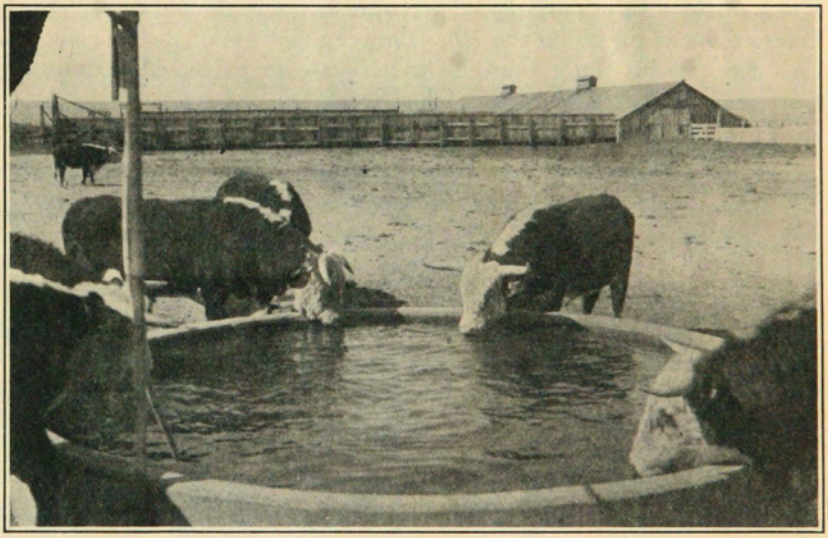
Ranch No.	Total number sold	Cows	Bulls	Calves	Yearling Heifers	Yearling Steers	Two-year-old Heifers	Two-year-old Steers	Aged Steers
32	472	167	7	...	...	...	...	...	298
18	953	195	6	375	140	170	...	42	25
49	938	297	15	307	42	199	64	14	...
52	406	34	4	...	...	...	...	99	269
21	247	33	2	212	...	...	...	...	...
5	323	144	4	64	56	30	20	1	4
4	293	92	2	32	...	59	...	108	...
57	156	36	2	...	35	82	1	...	...
8	157	16	..	54	...	45	...	42	...
45	56	54	2	...	...	...	...	...	...
9	140	58	..	41	...	...	...	...	41
44	225	95	2	41	26	14	3	15	29
46	108	5	..	...	...	68	...	35	...
28	89	27	1	3	...	40	...	18	...
6	208	38	1	148	10	11	...	...	...
17	246	71	..	3	41	67	32	32	...
55	124	34	..	2	...	...	16	72	...
56	108	23	1	67	...	13	...	...	4
41	65	19	..	2	...	9	...	25	10
58	180	20	1	9	3	16	...	131	...
59	117	39	1	...	18	23	1	35	..
60	133	70	..	...	31	...	...	2	30
Av. number head	300	82	3	73	23	42	7	28	42
Pct. of total number sold		27.3	1.0	24.5	7.6	13.9	2.4	9.5	13.8
Pct. of value sold		22.5	1.0	16.8	5.6	15.2	2.3	13.1	23.5

Table 15 shows the percentage of growing cattle sold at different ages. Some of the ranches made a practice of growing out all cattle to maturity and selling only long age steers while the heifers are all thrown into the cow herd and finally sold as cull or dry grass-fat cows. Others will sell all calves reserving only enough heifers to take care of the replacement in the cow herd. Some sell the bulk of their growing stock as yearlings and two-year-olds while still others seem to market cattle of every class and age.

Table 15.—Percentage of Growing Cattle Sold at Different Ages

Ranch No.	Heifers			Steers			Marketing practices
	Calves	Yearlings	Twc's	Yearlings	Two's	Three's and over	
32	...	...	...	...	...	100.0	Long-age steers.
49	49.1	6.7	10.2	31.8	2.2	...	Mostly calves and yearling steers.
18	49.9	18.6	. . .	22.6	5.6	3.3	Mostly calves and yearlings
52	...	...	...	...	26.9	73.1	Steers, two's and up.
4	16.1	...	...	29.6	54.3	...	Yearling and two-year-old steers and a few calves.
9	50.0	...	...	...	...	50.0	Half and half, calves and long-age steers.
5	36.6	32.0	11.4	17.1	0.6	2.3	Yearlings and calves.
44	32.0	20.3	2.3	11.0	11.7	22.7	One-third each calves, yearlings and older steers.
17	1.7	23.4	18.3	38.3	18.3	...	Yearlings and two's.
45	...	...	...	...	...	...	Only cows sold during years studied.
60	...	49.2	...	...	3.2	47.6	Heifers as yearlings; steers as three's.
8	38.3	...	...	31.9	29.8	...	Calves, yearlings and two-year-old steers.
57	...	29.7	0.8	69.4	...	...	Yearlings.
46	...	...	...	66.0	34.0	...	All steers, yearlings and two's.
21	100.0	...	...	...	...	...	Calves.
55	2.2	...	17.8	...	80.0	...	Two-year-olds.
6	87.6	5.9	...	6.5	...	...	Calves and a few yearlings.
28	4.9	...	...	65.6	29.5	...	Steers, two-thirds yearlings, few calves.
58	5.7	1.9	...	10.0	82.4	...	Two-year-old steers, yearlings and calves.
41	4.3	...	...	19.6	54.4	21.7	Steers, mainly two's a few calves.
59	...	23.4	1.3	29.9	45.4	...	Two-year-old and yearling steers, yearling heifers.
56	79.3	...	...	15.5	...	4.7	Calves, few yearlings and older steers.
Av.	34.0	10.7	3.2	19.5	13.1	19.5	

AVERAGE SALE WEIGHTS PER HEAD.—Table 16 shows the average sale weights per head by classes. These figures are for most classes of growing cattle slightly less than a computed total which could be made from table 13. This is in large part due to the fact that sales are frequently made before a full year's gain has been put on so that the actual weight at the time of sale is not quite as great as would be the case at the end of the year. Another reason for the difference may be found in the fact that the sale weights are the actual market figures while the beef production shown in table 13 includes ranchmen's estimates as to inventory weights. On the whole there is very close agreement between the two tables.



Good wells and troughs are valuable assets

Table 16.—Average Sale Weights Per Head by Years and Classes (Pounds)

	1922	1923	1924	1925	Average
Cows	785	830	840	845	832
Bulls	1220	1200	1202	1243	1213
Calf (9 mo.)	354	410	317	300	355
Heifers, 1's	473	483	526	516	516..
Steers, 1's	526	479	453	538	504
Heifers, 2's	...	714	714	698	711
Steers, 2's	768	675	732	742	734
Aged steers	933	960	927	910	931

AVERAGE SALE PRICES PER HEAD.—The cattle sold from these ranches in the different years brought the price per head shown in table 17. For practically every class of cattle the year 1924 shows the lowest return per head. The actual sale price received for the different classes of cattle, when compared with the price at which ranchmen inventoried their livestock, which was discussed in connection with table 4, shows that heifers were sold at just about inventory prices. Steers brought nearly $10 per head more on the market than the value at which they were carried in the inventory. Cows and bulls were held in the inventory at much higher figures than they brought at sale since, in practically all cases, sales of these animals represented their value at the end of their usefulness.

Inventory values are placed on cattle at the beginning of each year. Sales are made mostly in the fall. Between the first of the year and the sale date, young cattle continue to increase in value, while breeding cows and bulls decrease.

Table 17.—Average Sale Price Per Head by Years and Classes

	1922	1923	1924	1925	Average
Cows	$20.54	$25.08	$24.05	$30.91	$25.82
Bulls	28.55	34.47	31.20	35.70	33.09
Calf (9 mo.)	20.52	22.51	18.60	23.00	21.50
Heifers, 1's	26.77	22.82	21.01	27.93	23.03
Steers, 1's	34.00	32.45	27.02	40.38	34.39
Heifers, 2's	....	27.38	29.50	35.32	30.65
Steers, 2's	49.96	29.74	42.73	46.04	43.64
Aged steers	55.22	53.80	49.85	54.40	53.35

Table 18 shows the average price per hundredweight for each class of cattle. There is very little difference in the average price received per hundredweight for the sale of calves, yearlings, two-year-olds and older steers. The yearling steers brought the highest price of any class of steers and the aged steers brought the lowest. Unless gains for steers beyond one year old could be put on more economically than for younger cattle, it would seem that best profits could be realized by selling steers not older than two years. As shown in Table 14 the aged steers put on about half the gain in weight per head of the younger cattle while the average price per hundredweight is no greater than for the younger cattle. Conditions of abnormal market prices might justify men in holding cattle an extra year in the hopes that the market would improve but under normal conditions these records suggest that it is undesirable to hold steers on the range beyond two years of age.

Table 18.—Average Sale Price Per Hundredweight Each Year by Classes of Cattle

	1922	1923	1924	1925	Average
Cows	$2.62	$3.02	$2.86	$3.66	$3.11
Bulls	2.34	2.87	2.59	2.87	2.73
Calves	5.79	5.49	5.87	7.66	6.05
Yearling heifers	5.66	4.73	4.00	5.41	4.46
Yearling steers	6.46	6.78	5.96	7.51	6.83
2-year heifers	...	3.84	4.13	5.06	4.31
2-year steers	6.51	4.41	5.84	6.20	5.95
Aged steers	5.93	5.51	5.38	5.98	5.74
Av.	4.92	4.75	4.13	5.49	4.83

There is always a question in the minds of cattlemen as to where to sell their cattle. What market will net them the most? To attempt an answer to this question the sales for the four-year period were grouped as to sales at the ranch and sales at the central markets. Table 19 shows the results. When comparison is made per hundredweight of sales the ranch sales showed a slight advantage for bulls, calves, heifers and about a dollar per hundredweight advantage for one-year-old steers and about fifty cents for two-year-old steers. Cows brought considerably more at the central markets.

However, when the net returns above marketing costs are compared on a head basis as shown in the last two columns of the table, there is not so much advantage in ranch sales. The central markets brought a higher net return per head for cows, two-year-old steers and heifers, while ranch sales brought more for bulls, calves, yearling steers and old steers.

It is difficult to determine which of these comparisons is the more reliable as a guide in the choice of a market. When bulls or heifers are in demand for the breeding herd, the ranch sales should prove more profitable. The same should be true where there is a demand for steers to run on summer pasture or for feeders.

When cows are past their usefulness, or cattle are ready for slaughter, it is reasonable to conclude that a better price can be secured at the central markets as the local buyer will try to purchase at a figure that will net him a profit on the deal.

The two-year-old steers brought a higher price per hundredweight at the ranch but a higher price per head at the central markets. This apparent contradiction was due to a difference in weights. Steers sold at the ranch weighed 704 pounds while those sold at the central markets weighed 798 pounds. Also in the case of heifers, ranch sales averaged 551 pounds and central market sales averaged 584 pounds. The weights at the market were scale weights, while those at the ranch in

most instances were based on the owner's estimates. The difference may be due either to underestimating on the part of ranchmen or to the fact that the sales were of different bunches of cattle. The fact remains that two-year-olds and heifers brought slightly more per head at the central markets.

Taking the comparison as a whole, there is nothing to justify one in avoiding ranch sales. Choice of a sales market should depend upon the class of cattle and market conditions.

The central market sales were mostly at Denver and Kansas City. Sometimes one gave a better price, sometimes the other. Neither can lay claim to being consistently a better cattle market.

Table 19.—Comparison of Ranch and Central Market Sale Prices, Average for Period Studied

Class of cattle	Average net price per cwt.		Average net per head	
	Ranch sales	Central markets	Ranch sales	Central markets
Cows	$2.81	$3.40	$22.23	$29.66
Bulls	2.97	2.59	35.94	31.96
Calves	5.83	5.80	21.74	16.08
Yearling steers	6.93	5.92	34.37	32.78
Two-year-old steers	6.08	5.61	42.83	44.77
Steers 3 years or older	5.85	5.57	54.33	50.25
Heifers	4.45	4.39	24.55	25.63

Water-hole trails

COST OF PRODUCTION

Cattlemen are interested in the comparative cost of producing a calf and of running a steer on the range. Where a business is conducted in the way that a cattle ranch is, it is difficult to distinguish between the costs that relate to producing calves and those that relate to other classes of cattle.

Cattle of all ages use the same land. The same labor cares for each. Winter feed can be separated fairly well. But interest, taxes, depreciation and many other items like the pasture and labor are all unavoidable costs of the cattle business, yet obviously not all chargeable to the breeding herd nor to any other class of cattle. Some items of cost may be related to the breeding herd more than to steers. Others cannot be separated.

There is one point, however, which seems fairly obvious. The ranch as a whole exists for the production of cattle. In most instances any other income is incidental as shown in table 6. With this in mind the authors decided to use a ranch expense comparison.

Table 6 shows the expenses for each ranch. The average for all ranches was $7,953. This does not include any interest nor the value of operator's labor but it does include purchase of cattle. Most of the cattle purchased on these ranches were to replace death loss and canner sales except in the instances noted where entire herds were purchased on one or two ranches. In order to give a comparison which would more nearly reflect normal conditions it was thought best to eliminate the actual cost of cattle purchased and substitute for it the normal depreciation and death loss on the breeding herd. For all ranches this figure averaged $2,145 per ranch. This represents an expense which is chargeable to the breeding herd and the calves produced rather than to the entire cattle expense.

An analysis of table 6 shows that there were very few sales from these ranches of anything except cattle. The sales of crops, livestock products and livestock other than cattle shown in table 6, give only $499 total income from these sources for the average ranch. Since it is difficult to determine what proportion of the ranch expense was used in the production of these miscellaneous minor sources of income it was arbitrarily assumed that their cost was the same as their returns, namely, $499. This no doubt involves a slight error but, by subtracting $499 from the total ranch expense, one can secure the net expense which must be met entirely from the sales of cattle.

Table 9 shows that the unpaid family labor on these ranches averaged $642. In many instances this represented a large proportion of the entire labor expense. Since the ranch could not operate without this unpaid labor, it was thought best to include it with the other

ranch expenses, and analyze the net ranch expense chargeable to cattle, both with and without interest. This shows what ranch expenses must be met from cattle production before the ranches can break even.

Following this method of approach and referring back to the ranch expense shown in table 7 of $7,953, one can secure a result of $6,443 as the average net ranch expense other than interest, depreciation and death loss of breeding herd which must be met from cattle sales. The average interest per ranch was $6,314.

The number of head of cattle other than calves run on these ranches as shown in table 3 was 1,016. Dividing this into $6,443 gives $6.34, average ranch expense per head other than interest, death loss and depreciation. The ranch expense per head, including interest for the average of all ranches was $12.55. The death loss and depreciation on breeding herd of $2,145 when divided by the number of cows and bulls in the breeding herd as shown in table 3 gives a death loss and depreciation expense per head in the breeding herd of $3.87.

Table 20 shows the results of this method of analysis for each year together with the average for the four years. The average net expense per head of cattle was $12.55 including interest, and $6.34 without interest. The death loss and depreciation in the breeding herd averaged $3.87 per head . This amount added to the general expenses chargeable to all cattle brings the total expense per head in the breeding herd up to $16.42 including interest and $10.21 without interest.

Table 20.—Ranch Expense Per Head of Cattle Except Calves

	1922	1923	1924	1925	Av.
Net ranch expenses other than death loss and depreciation of cattle—					
Without interest	$ 6.37	$ 6.87	$ 5.90	$ 6.19	$ 6.34
With interest	11.80	13.15	12.33	12.65	12.55
Breeding herd death loss and depreciation per head	4.67	3.78	3.66	3.57	3.87
Total breeding herd ranch expense per head—					
Without interest	11.04	10.65	9.56	9.76	10.21
With interest	16.47	16.93	15.99	16.22	16.42

RANCH EXPENSE PER 100 POUNDS OF BEEF PRODUCED.—The analysis in the preceding table gives the average ranch expense per head of cattle regardless of their class, age or weight. Table 13 shows that there is considerable variation in the amount of beef produced per year by animals of different ages. If the pounds per head shown in table 13 are divided into the average yearly ranch expense as shown in

table 20, it will give the ranch expense per 100 pounds of beef produced for each class of cattle as shown in table 21.

The expenses other than interest are $3.17 per hundredweight of calves produced by the breeding herd. There is slight variation from this figure in the production of yearling and two-year-old heifers and steers. However, when the death loss and depreciation in the breeding herd which represents $1.94 per hundredweight is considered, the total calf expense is $5.11 which is approximately $1.75 higher than the expense for yearling and two-year-old cattle. The expense for aged steers is the highest of that of any group due to the lower pounds production per head as shown in table 13.

This higher expense per hundredweight of calves as compared to other growing cattle is due to the low percentage calf crop. With a 56 percent average calf crop, 56 calves must carry the entire expense of 100 cows and accompanying bulls. This makes the expense higher on calves than on other growing cattle. If the percentage calf crop is 70, the expense of producing calves would be the same as for yearlings and two-year-olds. With calf crops better than 70 percent the calves would be produced cheaper than other cattle.

This method of analysis suggests that up until cattle are two years of age there is little difference in the ranch expense per 100 pounds of beef produced. The production of calves costs more than that for either yearlings or two-year-olds. It would seem from these figures that better results could be obtained by selling cattle either as yearlings or two-year-olds than could be obtained by selling as calves or as aged steers.

Table 21.—Net Ranch Expense Per 100 Pounds Beef Produced

	1922	1923	1924	1925	Av.
	Expense per hundredweight including interest				
Heifers, 1's	$ 6.31	$ 6.88	$ 6.63	$ 6.55	$ 6.61
Steers, 1's	5.06	6.06	7.43	5.86	6.15
Heifers, 2's	6.98	7.47	6.77	7.27	7.13
Steers, 2's	5.49	7.83	6.52	6.32	6.47
Aged steers	10.35	11.43	18.68	14.71	13.35
Calves	5.41	6.14	6.32	7.35	6.28
Death loss and depreciation on breeding herd	2.14	1.77	1.88	2.07	1.94
Total calf expense	7.55	7.91	8.20	9.42	8.22
	Expense per hundredweight not including interest				
Heifers, 1's	3.41	3.58	3.17	3.21	3.34
Steers, 1's	2.73	3.17	3.55	2.87	3.11
Heifers, 2's	377	3.90	3.24	3.56	3.60
Steers, 2's	2.96	4.09	3.12	3.10	3.27
Aged steers	5.59	5.97	8.94	7.20	6.74
Calves	2.92	3.15	3.03	3.60	3.17
Death loss and depreciation on breeding herd	2.14	1.77	1.88	2.07	1.94
Total calf expense	5.06	4.92	4.91	5.67	5.11

COST OF CARRYING A COW IN THE BREEDING HERD.—There are some who may question the accuracy of the results discussed in the above tables. To check up on these results the items of expense that could be directly charged to the breeding herd were carefully checked over and a separate breeding herd cost was worked out.

The results of this special study are shown in table 22 as cost per cow in the breeding herd and cost per calf produced. This method of analysis is the same as that used in the preliminary reports for 1922, 1923 and 1924.

The average cost per cow shown in table 22 including interest and all other expenses is $18.95. This compares with a ranch expense per animal in the breeding herd shown in table 20 of $16.42. Part of this difference is due to the fact that the cost of bulls is charged against the cows in the breeding herd in table 22 while the number of bulls is included in the number of animals used as the basis for securing the ranch expense per head in the breeding herd shown in table 20.

The items of expense listed in table 22 were prorated to the breeding herd in proportion to the number of grazing ratio units of animals in the breeding herd as compared to the total number of grazing ratio units of the entire herd except in the case of certain items which could be charged direct to the breeding herd such as winter feed, depreciation and some small items of expense.

Crowding in at feeding time

Table 22.—Breeding Herd Cost Per Cow and Calf: Average for Each Year

	1922		1923		1924		1925		Av. 4 years	
	Per cow	Per calf	Per cow	Per calf	Per cow	Per calf	Per cow	Per calf	Per cow	Per calf
Number of cows	6,098		9,061		8,208		7,721		31,088 [1]	
Number of calves		3,904		5,403		4,765		4,014		18,086 [1]
Winter feed	$1.37	$ 2.14	$ 2.32	$ 3.90	$ 2.39	$ 4.12	$ 1.51	$ 2.90	$ 1.95	$ 3.35
Salt	.09	.14	.08	.13	.07	.13	.08	.15	.08	.14
Hired labor	1.34	2.09	1.36	2.28	.77	1.32	.94	1.80	1.09	1.88
Repairs	.11	.18	.12	.20	.13	.23	.06	.12	.11	.19
Miscellaneous expense	.56	.87	.56	.94	.42	.73	.42	.80	.49	.84
Taxes	1.00	1.56	1.53	2.56	1.27	2.18	1.14	2.19	1.26	2.17
Death loss on breeding herd	2.09	3.26	1.44	2.41	1.48	2.54	1.44	2.78	1.58	2.70
Depreciation on breeding herd	2.75	4.29	2.48	4.15	2.31	3.98	2.23	4.30	2.42	4.17
Depreciation on equipment	.32	.49	.27	.46	.27	.47	.28	.54	.28	.49
Depreciation on improvements	.22	.35	.24	.41	.24	.41	.22	.43	.23	.40
Leased grazing land	1.76	2.75	1.55	2.60	1.34	2.31	1.77	3.40	1.59	2.73
Operator's and unpaid labor	.39	.61	.44	.74	.60	1.03	.54	1.04	.50	.85
Net cost	12.00	18.73	12.39	20.78	11.29	19.45	10.63	20.45	11.58	19.91
Interest on indebtedness	2.63	4.12	3.43	5.75	2.99	5.15	2.54	4.87	2.94	5.05
Interest on operator's equity	3.74	5.85	4.31	7.23	4.78	8.24	4.74	9.12	4.43	7.62
Gross cost	18.37	28.70	20.13	33.76	19.06	32.84	17.91	34.44	18.95	32.58

[1] Total number

RANCH MANAGEMENT

RELATION OF RAINFALL TO RATE OF STOCKING.—Probably the most important factor in determining the use of grazing land is the rainfall.

All ranches in the study fall in one or another of the three main rainfall areas of the plains, namely, two ranches in the 10- to 13-inch rainfall area, eleven ranches in the 13- to 16- inch rainfall area and nine ranches in the 16- to 20-inch rainfall area.

Table 23 shows the average number of cattle per section, acres per head, percentage of land used for feed crop production and pounds of beef produced per acre for the three different groups. Two of the ranches have been eliminated from this table. Ranch 60 was eliminated because of the unknown area of free range used, and ranch 32 because of its size and other factors.

The area designated as the 10- to 13-inch rainfall area is small and relatively unimportant when considered from the standpoint of ranching. Only two ranches were studied in this area and because of this small number the data for this group are not so significant as is the case with the other two groups.

It will be noted that the rate of stocking for the two last groups is very nearly the same but there is considerable difference in the amount of feed crops produced and the beef production per acre.

Even with the use of a considerably greater amount of supplementary feeds the group of ranches in the 13- to 16-inch rainfall area was unable to produce as much beef per acre as the group in the 16- to 20-inch rainfall area.

Ranch 32, altho located in the 13- to 16-inch rainfall area is more favorably located than the others in this group as the range is mostly along streams and canyons where vegetation is much better and enables this operator to stock much heavier. On this ranch scarcely any land was used for feed crop production.

Table 23.—Relation of Rainfall to Rate of Stocking

Rainfall area	No. of ranches	Head of cattle except calves per sec.	Acres per head except calves	Percent of all land used for crop production	Pounds beef produced per acre
10-13 inches	2	20	32.3	none	5.7
13-16 inches	10	33	19.2	1.96	9.8
16-20 inches	8	32	19.9	1.28	10.3
Average	20	31	20.4	1.40	9.7

SYSTEMS OF GRAZING.—The systems of grazing generally employed can not be said to be very good for the improvement of the range. Most of the ranches used either yearlong grazing over the entire range or seasonal, reserving a part of it for winter pasture. This winter pasture usually consists of the same part of the range used for this purpose year after year with no attempt at any regular rotation. Most men see the desirability of rotated and deferred grazing but realize that it will necessitate considerable extra expense in the way of cross fences and equipment. Also on many ranches certain parts of the range may be unsuited for rotated grazing, due to a lack of natural shelter and water.

Table 24.—Amounts of Winter Feed by Classes: Pounds Per Head

	1922		1923		1924		1925		Average	
Class of Cattle	Roughage	Concentrates	Roughage	Concentrates	Roughage	Concentrates	Roughage	Concentrates	Roughage	Concentrates
Cows	221	26	399	57	423	65	141	44	306	50
Bulls	742	113	1017	158	1189	144	249	109	840	134
Yealings	724	45	669	86	532	39	569	37	613	53
2-year-olds ...	1000	91	151	39	209	25	268	56	347	49
3-yr.-old steers	301	69	...	..	207	46	52	17	113	27

Roughage includes hay, sorghum and fodder.
Concentrates include, chiefly, cottonseed cake.

FEED CROP PRODUCTION.—Some supplementary feeds were produced on all ranches except the two noted above. Sorghum, either for hay or fodder, constituted 46 percent of the roughage; wild hay, 20 percent; alfalfa hay, 16 percent; corn, 15 percent; and about 3 percent of other grain hays, millet, etc. Corn made up 91 percent of all grain raised, the other 9 percent being oats, barley and wheat.

The average production per ranch per year was 74 tons of sorghum fodder, 33 tons wild hay, 26 tons alfalfa hay, 28 tons of corn fodder and other miscellaneous roughages combined. Grain corn amounted to 359 bushels per ranch per year and other grain 21 bushels.

The question may be raised: 'Was this crop production profitable?' To this we would reply that since these crops are not grown as cash crops or direct revenue producers and no nearby market exists at which these feeds can be purchased with any degree of dependability, either with respect to supply or a fair price, we are inclined to adopt the viewpoint of most cattlemen in this area who look upon the growing of crops as a form of insurance or protection against excessive death loss,

poor calf crop, etc. If a cattleman was to buy his feed, especially roughages, as he needed it, he would have to buy from neighbors that raised it, and the very conditions that might force him to buy would also tend to force the neighbor grower to use the feed himself.

In charging home grown feed to cattle it is necessary to use some basis of arriving at the value. The method used in these studies was as follows: The ranch expenses which could be directly charged to crop production were tabulated and prorated to the various crops. Interest on investment was not included in these prorated charges. This resulted in an approximate net ranch cost rather than a market price. The average for the more important feeds was as follows: Alfalfa hay, $8.60 per ton; wild hay, $5.52; sorghum fodder, $3.61; corn fodder, $4.93; and corn 46 cents per bushel.

If interest on investment in land and equipment were to be added to this cost figure it is certain that the gross cost would mount con-

Cotton-seed-cake feeding from horseback is a common practice

siderably over average prices for this territory. On the whole cattlemen may be said to be rather inefficient in crop production. This is no doubt due to the fact that to most cattlemen the farming end is a new thing and is usually resorted to in a somewhat reluctant mood. Those who attempt to utilize their regular ranch help in the growing of crops usually find that a cowpuncher will balk when it comes to riding a plow, harrow or cultivator. It is therefore necessary in some cases to hire a separate man or number of men to do the crop work. On some of the larger outfits this is very desirable and efficient but the medium sized and smaller ranches usually find that crop production and cattle work involve a duplication of labor.

WINTER FEEDING.—On the whole comparatively small amounts of feed were used in wintering cattle. In table 24 the pounds of feed per head are shown with averages for the four years. The feed is figured on the basis of number of cattle on the ranch for the entire year. Bulls were fed the heaviest, yearlings or weaned calves came next with cows and two-year-olds still less. The reason that the amounts shown for cows appear small in comparison with the others is that some of the larger operators do not feed all the cows but cut out the thin ones and feed them by themselves, while weaned calves and young growing cattle are fed on nearly all the ranches.

Table 25 shows the cost per head of the feeds used. Of the roughages used the sorghums constitute 67 percent; alfalfa and native hay, 27 percent; and other roughages, 6 percent. Cottonseed cake amounted to 81 percent of the concentrates, and corn, barley and other grains, 19 percent.

Table 25.—Cost of Winter Feed by Classes for Each Year: Average Cost Per Head

Class of cattle	1922	1923	1924	1925	Average
Cows	$1.25	$2.13	$2.18	$1.41	$1.79
Bulls	3.69	5.56	5.89	3.26	4.78
Yearlings	1.87	2.33	1.85	2.14	2.07
Steers, 2-year-olds	1.84	1.39	.90	1.86	1.47
Steers, 3-year-olds	1.19	....	.99	.51	.58

DEATH LOSSES.—Death losses on cows per ranch and per year are shown in table 26. A wide variation will be noted in these losses for the individual ranches. On one ranch the death loss on cows was 23 percent in 1923. This was due, according to the owner, to the fact that he was unable to obtain money to purchase cottonseed cake. The winter and spring were bad and the cows "died like flies."

The average death loss for all ranches was 3.5 percent on cows, 6.6 percent on bulls, 2.2 percent on two-year-old heifers, 3.1 percent on yearling heifers, 3.6 percent on yearling steers, 2.2 percent on two- and three-year-old steers and 1.6 percent on older steers. The average death loss on all classes of cattle was 3.15 percent. In only a few instances was it possible to ascribe definite causes. Cow loss occurred mostly during winter and early spring or at calving time. The high percentage of loss on bulls was augmented by one rancher that lost seven bulls one year from anthrax, and another that lost sixteen bulls in one year, some of which were probably stolen. In some localities the cattlemen are still being bothered to some extent by thieves. Their operations are confined for the most part to picking up un-

branded calves and young cattle, throwing them into a truck and driving off to some distant place for slaughter or trade.

Table 26.—Percentage Death Loss of Cows

Ranch No.	1922	1923	1924	1925	Average for period: Cows	Average for period: Entire herd
32	5.0	1.6	4.0	7.0	4.7	4.2
18	3.7	.8	3.1	1.3	2.2	1.9
49	..	2.0	1.0	1.0	1.3	1.6
52	..	1.7	2.7	2.3	2.3	1.9
21	6.9	2.7	..	..	4.9	5.7
5	1.3	.5	3.8	.7	1.5	1.4
4	2.3	4.8	..	..	3.1	2.7
57	..	..	1.6	.7	1.1	0.9
8	2.3	2.1	..	..	2.1	2.0
45	..	..	..	..	2.6	2.3
9	4.7	23.0	..	..	14.4	9.7
44	..	2.1	1.6	7.2	3.0	5.2
46	..	2.9	..	..	4.3	3.0
28	2.1	2.3	1.8	3.3	2.7	2.2
6	4.9	4.1	2.4	1.1	2.9	3.4
17	11.7	1.3	6.3	..	6.1	4.9
55	..	..	1.3	.7	1.1	1.0
56	..	..	8.2	2.5	5.7	5.5
41	2.5	5.2	7.0	.9	4.5	2.6
58	..	..	10.8	2.0	6.2	4.2
59	..	..	12.9	2.3	11.0	5.6
60	..	..	5.7	3.8	4.6	4.5
Av. (cows)	4.7	3.1	3.3	3.2	3.5	..
Av. (entire herd)	3.8	2.9	3.6	2.5	..	3.15

The percentage death loss on calves from birth to branding time is very hard to ascertain. This loss is especially heavy in the early spring storms. Most of the men in this study, however, aim to have the calves dropped late enough to avoid this hazard.

CALF CROP.—Table 27 shows the percentage of calf crop per ranch and per year. The year 1924 being very dry apparently resulted in a lower calf crop in 1925.

There are a number of factors under the direct control of the ranchman that influence the size of the calf crop such as good condition of breeding cows and bulls, young vigorous bulls in sufficient numbers; careful management with regard to keeping bulls properly distributed thruout the cow-herd during the breeding season; weeding or culling out the non-breeding cows and so on.

Perhaps the greatest influence on the size of calf crop is the condition of the cows and bulls at breeding time. It is common knowledge among ranchmen that a starved cow will not breed. As the breeding period usually starts in the late spring it is apparent that the wintering of the breeding herd is of the utmost importance. A few of the ranchmen try to keep the herd in fair condition with practically no supplementary feeding thru the winter months by reserving the best grass for winter grazing. The practice works well enough in normal years but in dry years some supplementary feed is necessary. A light calf crop may usually be expected after a dry season. The use of feeds such as hay and corn and sorghum fodders, cottonseed cake, corn and sorghum grain seem to have a direct relationship to size of calf crop.

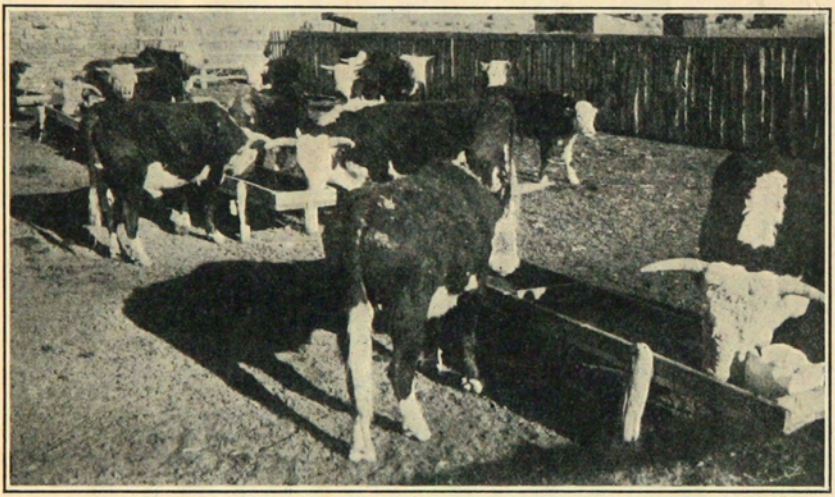
Table 27.—Percentage of Calf Crop

Ranch No.	1922	1923	1924	1925	Average
32	61	41	52	34	46
18	76	71	59	58	65
49	..	77	64	62	68
52	..	52	47	34	44
21	46	59	..	..	52
5	40	53	42	41	44
4	60	42	..	..	52
57	..	..	56	59	58
8	55	59	..	..	57
45	..	60	..	..	60
9	58	34	..	..	46
44	..	47	38	42	43
46	..	58	..	..	58
28	68	73	59	69	67
6	66	55	61	61	61
17	61	67	45	..	58
55	..	..	91	84	88
56	..	..	69	72	70
41	53	49	51	27	45
58	..	..	77	48	63
59	..	..	66	63	65
60	..	..	41	48	44
Av.	61	57	55	49	56

Table 28 shows the relation of the amount of winter feed for cows and the resulting calf crop. The ranches are divided into two groups, those using less than $2.00 worth of winter feed per cow and those using over $2.00 worth of feed per cow. The amounts of the different kinds of feeds used are shown for each ranch. The first group used an average of $1.37 worth of winter feed which was largely fodder,

native hay and cottonseed cake. They secured a calf crop of 53 percent. The group using more winter feed had an average of $3.16 for feed and secured a calf crop of 62 percent.

If 100 cows were fed the extra feed shown in the last group it would cost $179 based on these figures. These 100 cows would produce 9 calves more, apparently due to the extra feed. Looked at in this way and referring back to table 22 it apparently costs no more to produce extra calves by heavier winter feeding of the cows than it does to produce the average calf on these ranches.



Separate feeding pens for thin steers

In connection with table 28 it might be well to point out the fact that the four men in the low feed cost group that secured calf crops above the average (56 percent), namely, Nos. 6, 18, 28, 57, were also above the average in the matter of acres of grazing land per head as seen in table 23.

However, for the ranches as a whole there seems to be no relation between the value of winter feed and the rate of stocking. Neither is there any apparent relationship between the amount of winter feed shown in table 28 and the death loss in the breeding herd.

The number of cows per bull is another factor that is considered by most writers on the subject as of great importance. The results of this study based on a limited number of ranches, point to the fact that no definite number of cows per bull can be advocated for all conditions and localities. The right number of cows per bull is a mat-

Table 28.—Effect of Winter Feed Upon Calf Crop: Average for Period Studied

Group	Ranch No.	Value of feed	Percent calf crop	Pounds of feed per cow				
				Alfalfa hay	Native hay	Sorghum, corn fodder, misc. roughage	Cottonseed cake	Corn
Winter feed value below $2 per cow	32	.43	.46	18	9	..	12	..
	21	.73	.52	..	121	..	5	..
	5	.83	.44	93	..	41	19	..
	9	1.10	.46	54	93	..	18	41
	57	1.21	.58	..	45	48	30	..
	6	1.54	.61	..	262	457	34	..
	18	1.72	.65	..	99	43	61	..
	4	1.76	.52	18	..	210	27	..
	52	1.87	.44	..	..	..	67	..
	28	1.93	.67	99	84	59	..	129
	60	1.94	.44	..	21	85	73	12
Ave. for group		1.37	.53	26	67	86	31	17
Winter feed value over $2 per cow	44	2.02	.43	..	6	378	48	23
	58	2.20	.63	586	967	..	9	9
	17	2.49	.58	160	57	556	..	45
	46	2.56	.58	393	..	436	..	..
	41	2.94	.45	731	33	289	..	23 [1]
	56	3.17	.70	..	480	..	81	..
	49	3.26	68	..	18	480	94	3
	8	3.52	.57	..	96	697	3	154
	45	3.69	.60	395	134	1407	55	..
	55	3.86	.88	70	..	699	73	..
	59	5.11	.65	..	707	..	57	..
Ave. for group		3.16	.62	212	227	449	38	23

[1] Includes five pounds of barley.

ter that must be determined by each ranchman for himself, depending on the lay of the land and method of handling.

The majority of the ranchmen actually ran a greater number of cows per bull than they claimed to be their regular practice. Also there was a tendency to use bulls longer than their judgment dictated, both of these facts being due to the depression in the cattle business making it necessary to reduce cash outlay to the utmost.

In table 29 the number of cows per bull has been compared with percentage of calf crop. The ranches have been grouped on the basis of number of cows per bull. Group 1, 30 cows and under; group 2, 31 to 40 cows; and group 3, over 40 cows. The number of ranches in each group is too few to justify any definite conclusion.

Eleven of the ranches bred their heifers to calve as two-year-olds and eleven to calve as three-year-olds. The average calf crop of the

Troughs help save feed and control feeding

first group was 52.6 percent and that of the second group, 56.4 percent, or nearly 4 percent difference in favor of the last named group.

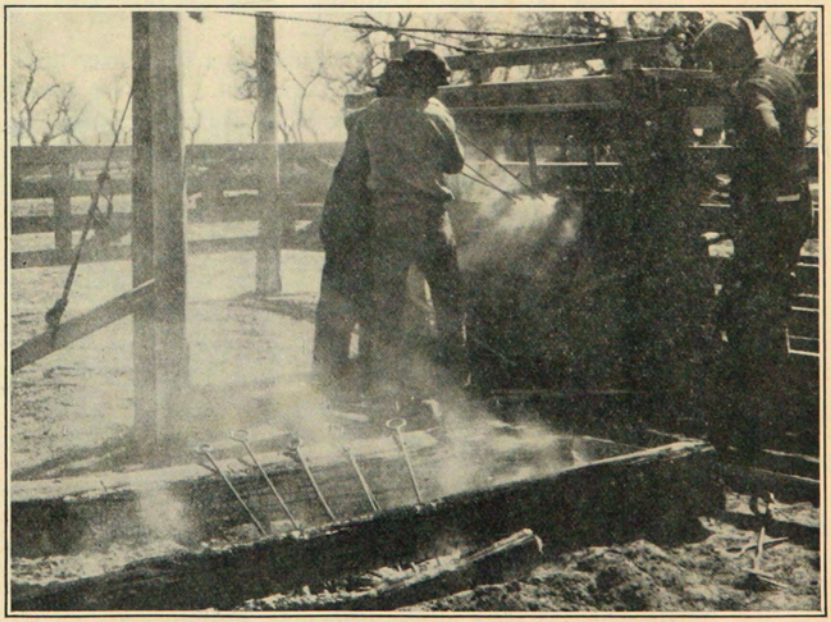
Ranches 21, 52 and 57 ran an average of 25 cows per bull and the calf crop was 51 percent average for the three ranches. On the other hand ranches 55, 58 and 59 ran an average of 48 cows per bull and their average calf crop was 72 percent. The first group ran in quite large pastures with rough broken topography which gives the bulls a chance to gather in bunches and hide out. Even with constant riding it is difficult to keep them properly distributed among the cows. One of these men emphasized the fact that his range had too many water

holes, giving this as a reason for not getting a better calf crop. Several bulls would bunch up at a water hole and stay there until found and scattered by the rider.

The three ranches in the second group mentioned above are all smaller outfits located in a much more level and open country and with smaller pastures giving better opportunity for close observation.

Table 29.—Comparison of Number of Cows Per Bull and Percentage of Calf Crop

Less than 30 cows per bull			30 to 40 cows per bull			Over 40 cows per bull		
Ranch No.	No. cows per bull	Percent calf crop	Ranch No.	No. cows per bull	Percent calf crop	Ranch No.	No. cows per bull	Percent calf crop
52	20	44	5	31	44	32	41	46
49	27	68	17	33	58	60	46	44
57	27	58	44	35	43	55	45	88
56	27	70	28	38	67	58	49	63
21	28	52	6	38	61	59	49	65
45	29	60	18	38	65	41	53	45
46	29	58	4	40	52	8	54	57
						9	68	46



Putting on a real brand

REPLACEMENT OF BREEDING ANIMALS.—On a well organized ranch it seems desirable to maintain the breeding herd at approximately the same size from year to year. This presents a somewhat complicated problem in the case of cows. In case of bulls it is only a matter of culling out at the end of each breeding season and buying enough to replace death loss and sales for the next breeding season.

With cows it is an entirely different matter. Replacement cows or heifers are generally raised instead of purchased and the percentage of the required replacement must be anticipated a year or two in advance, depending on whether the heifers are bred to calve as twos or threes. Death loss on the heifers saved must also be reckoned with. An average of all ranches shows an estimated useful life of the breeding cow to be about seven and one-half years. This would mean a 13-1/3 percent replacement every year. However, the sum of the sales and death loss on these ranches divided by the number of cows on hand at the beginning of the year gives 18.7 percent as the actual replacement that took place and this would give slightly over 5 years as the average actual life of the breeding cow in the herd.

One reason for this will be found in the fact that heifers have not been selling to advantage at any time during the period of this study as may be seen from table 17. This evidently resulted in letting the heifers grow into the breeding herd and selling a greater proportion of the dry grass-fat cows.

The average estimated useful life of a bull was a trifle over three years. This would put the replacement at 33 percent. Figuring actual replacement on the same basis as used for cows shows 23.2 percent, or a service life of a little over 4 years in the breeding herd. Death loss was responsible for 29 percent of the bulls replaced and sales 71 percent. In the cow herd 19 percent was caused by death loss and 81 percent by sales.

RANCH LABOR.—In table 30 the amount of ranch labor expressed in months is tabulated per ranch and per year with averages. This includes all labor hired, operator's and unpaid family labor. It will be noted that the average per year drops from about 40 months per ranch in 1922 to a little more than 34 months in 1924. Then in 1925 the average is up two months per ranch or 36. This may be due in part to some ranches dropping out of the study and others being substituted, but the main cause was the fact that 1924 was the hardest year on the cattlemen in the area studied. The percentage of total ranch labor that was performed by owners and members of their families was 24.2 in 1922; 30.7 in 1923; 47 in 1924; and in 1925 it dropped back to 45.5 percent. As the business became less profitable, operators assumed a greater proportion of the labor.

Table 30.—Amount of Ranch Labor by Years, Including Operator's and Family's Labor

Ranch No.	Total months ranch labor				
	1922	1923	1924	1925	Average
32	68.50	62.10	74.00	76.31	70.23
18	66.60	70.50	46.00	64.40	61.88
49	....	69.20	76.00	75.30	73.50
52	....	39.00	40.00	41.10	40.03
21	12.10	13.10	....	....	12.60
5	47.25	39.00	26.00	27.50	34.94
4	21.80	32.25	....	...	27.02
57	....	....	21.00	20.70	20.85
8	51.50	46.30	....	....	48.90
45	....	31.50	....	....	31.50
9	36.80	39.00	....	....	37.90
44	....	40.12	29.00	37.00	35.37
46	....	20.90	....	....	20.90
28	25.00	21.48	22.00	33.00	25.37
6	36.00	24.00	24.00	18.00	25.50
17	41.50	39.30	43.00	....	41.27
55	....	....	26.00	25.00	25.50
56	....	....	26.00	26.40	26.20
41	30.60	21.54	25.50	26.90	26.14
58	....	....	39.00	36.00	37.50
59	....	....	19.00	19.50	19.25
60	....	....	13.00	18.00	15.50
Av.	39.79	38.08	34.34	36.34	36.92

Horns and hoofs get attention at roundup time

Table 31, number of cattle handled per man, shows the same tendency. More cattle per man were handled in 1924 than in any previous year, on the average.

Table 31.—Number of Head of Cattle Handled Per Man

Ranch No.	1922	1923	1924	1925	Average
32	988	1,109	996	994	1,019
18	665	643	1,023	673	726
49	...	1,085	947	781	926
52	...	495	538	596	543
21	614	601	...	...	607
5	745	683	840	511	684
4	706	430	...	...	561
57	...	...	577	624	601
8	559	543	...	...	551
45	...	516	...	...	516
9	347	331	...	...	339
44	...	531	1,064	571	661
46	...	344	...	...	344
28	272	426	536	412	401
6	469	568	611	836	502
17	467	599	403	...	482
55	...	...	343	364	353
56	...	...	207	208	208
41	358	715	829	494	538
58	...	...	376	382	379
59	...	...	294	425	341
60	...	...	957	564	718
Av.	635	657	727	659	666

Of the total amount of labor 65 percent was cattle labor while 32 percent was used for crop production and 3 percent on other livestock enterprises such as sheep and dairy cattle. Hired or paid labor cost on an average $56 per month in 1922, including a charge for board, $65 in 1923, $63 in 1924 and $61 in 1925.

There is always a plentiful supply of ranch labor tho not always of the best kind. There is an opinion held by most old timers that "men are not what they used to be." The hard times in the last few years caused discouragingly low wages to be paid in ranching compared with employment in the trades and business. The greater part of present ranch labor is apt to be made up of two classes: Older men, who, by reason of their many years of service in the cow business, are unable and unwilling to adjust themselves to other lines of employment, and younger men or boys seeking employment on the ranches as a sort of diversion or "thrill" in the form of "ridin,' ropin' and shootin.'" The first group, of course, form the most dependable class of ranch labor. The automobile, which is credited and charged alike with

most of the good and bad tendencies in social and economic development in agriculture, has its effect on ranch labor. In the words of time large outfits and even present day large ranches in Texas and one cattleman, "Every cow hand sports a car in which he chases around every night until he can't stay awake in the saddle in the day time."

Ranch labor is undoubtedly not so efficient as in the past. The old elsewhere figure 1000 head per man.

In special tasks like branding, dehorning and dipping, the neighboring ranchmen will co-operate with each other or exchange work. This makes the most efficient way of handling jobs of that sort as every man is experienced in all phases of working cattle.

FACTORS AFFECTING INCOME

Individual ranchmen show considerable variation in their methods and systems of managing their ranches. There is little agreement as to the best method of marketing. Owing to these variations and also a tendency for the ranchmen to change their marketing practices from year to year, it was a difficult matter to group the ranches for comparison.

EFFECT OF SELLING CALVES ON INCOME.—It was found, however, that the practice of selling calves to any considerable extent bore a marked relationship to the financial situation on the ranches. In table 32 the ranches have been divided into two groups, those selling less than 10 percent of their calves and those selling more than 10 percent of their calves.

Table 32.—Relation of Selling Calves to Financial Situation

Percent of calves sold	No. of ranches	Debt as a Pct. of investment	Receipts as a Pct. of investment	Percent return on investment
Less than 10%	11	30.5	11.9	3.71
Over 10%	11	41.1	9.3	1.04
Av. all ranches	22	33.9	11.1	2.39

In table 33 the relation between the practice of selling calves and some other phases of management has been set forth.

Table 33.—Relation of Selling Calves to Other Phases of Management

Precent of calves sold	No. of ranches	Percent of land in crops	No. of cattle handled per man	Cattle per section except calves
Under 10%	11	.92	696	42
Over 10%	11	1.36	639	31
Av. of all	22	1.16	666	34

The practice of selling calves by some of these ranchmen is more or less forced upon them by the necessity of raising cash to pay interest on borrowed money.

The ranches selling less than 10 percent of their calves are more likely to do so from a culling standpoint than as a regular source of revenue. In every bunch of calves there is a certain percentage that, if calves are sold, will go as the "cut" at a lower price than the rest or retained on the ranch to be added to the calves next year. If calves are not marketed this cut is sometimes taken and shipped with the old cows in the fall.

EFFECT OF SIZE OF RANCH ON INCOME.—In table 34 is shown the effect of the size of ranch upon the net return per acre for the use of land. In arriving at this figure all of the ranch expenses, including unpaid labor, were deducted from total ranch receipts to give a net return for the use of land.

Table 34.—Effect of Size of Ranch Upon Net Return Per Acre: Average for Period Studied

Range in size of ranch (acres)	Number of ranches	Net return per acre for use of land
69,225 - 13,500	7	$0.14
13,500 - 9,000	7	.03
9,000 - 4,360	7	.01
All	21	.10

Ranch 60 was left out of table 34 because of the unknown area of free range which was used. While the net returns per acre are low in all groups due to the low cattle prices during the study, yet the larger ranches made much better use of their land, not because of larger production per acre, but because of less expense. This comparison would suggest that in an extensive business such as cattle grazing, large area is vital.

RELATION OF DEATH LOSS ON COWS TO INCOME.—Death loss is an important factor affecting income. However on these ranches there was no correlation between death loss on cows and percentage on investment until over four percent loss was reached. With such a small number of ranches, size or economy of operation had more effect on income than death loss.

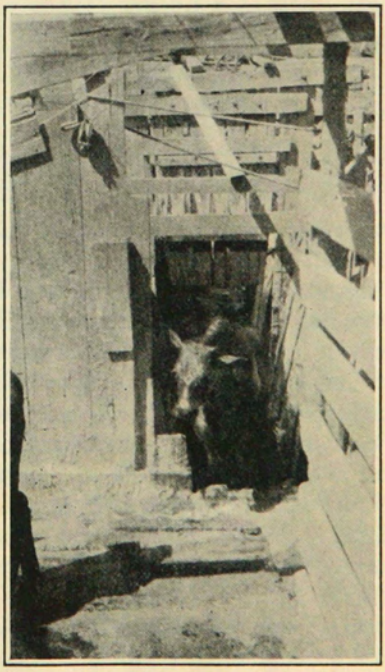
NUMBER OF CATTLE HANDLED PER MAN.—There is a general opinion among plains cattlemen that for the efficient use of labor the ranch must be so organized that 700 to 1000 cattle are handled per man in the crew. Table 35 seems to indicate an advantage in the way

of financial returns as the number of cattle per man increased. It should be remembered, however, that a man who is highly efficient in the use of labor is also apt to be above the average in the use of other factors of production.

Table 35.—Relation of Number of Cattle Handled Per Man and Percentage Return on Investment

Range in numbers of cattle per man	Number of ranches	Percent return on investment
401 - 600	8	1.32
Less than 400	6	.45
Over 600	8	2.54

EFFECT OF COST OF CALF PRODUCTION ON INCOME.—In table 36 the ranches are grouped according to the breeding herd cost of producing one hundredweight of calf, including all costs except interest. Ranches that were producing one hundredweight of calf for less than $5.00 were making 4.54 percent on the investment, while those with costs above $7.00, lost money.



Dipping equipment is necessary to control disease

It is fully as important to reduce the cost of operating a ranch as it is to try for higher market prices. Higher prices are largely out of the control of the operator. He can, however, do many things to reduce the cost of running a ranch, either by actually reducing expenses or by so handling his cattle that they put on larger gains with less death loss than normal.

Table 36.—Relation of Breeding Herd Cost of Calf to Percentage on Investment

Range in cost (except interest) per cwt. calf produced	Number of records	Percent of calf crop	Percent on Investment
$3.75 - $ 5.00	17	62	4.54
5.00 - 7.00	20	57	2.20
7.00 - 14.44	21	51	—1.08

LAND OWNERSHIP VERSUS RENTAL.—There is a question in the minds of many people as to the effect of land ownership on the returns from ranching. In the records included in this study, it was difficult to clearly distinguish between the expenses on owned land and leased land. If it had been possible to clearly separate the expenses of leased and owned land some positive relationships might have been developed. As suggested in the discussion of table 2 the cost per acre of leased land was so low that it should give an advantage, other things being equal, in the economy of operating a ranch.

EXAMPLES OF GOOD RANCH MANAGEMENT

While the average returns on the ranches included in this study were comparatively small yet individual operators made fair returns. In some instances this was due apparently to one factor; in other instances it was due to another. A somewhat detailed study of a few of these ranches will suggest some important reasons for success.

SMALL RANCH SELLING TWO-YEAR-OLDS.—Table 37 gives a summary of the organization and returns on ranch 58 for the two years for which this record was secured. This ranch is one of the smallest included in this study. In the year 1924 this operator made slightly over 6 percent on his investment and in 1925 he made 3.61 percent.

Of the 5,880 acres in this ranch 205 acres were used for hay and feed crop production. It is located in an area where the average rainfall is from 13 to 16 inches.

The rate of stocking was 38 head per section which is the average for the other ranches located in this rainfall area. The more liberal use of supplementary feeds, however, enabled this operator to obtain

the highest production of beef per acre of any of the men in this study.

In 1924 this ranch had 99 cows, 3 bulls, 27 yearling heifers, 134 yearling steers and 28 two-year-old steers, together with 45 head of horses of which only 13 were actually used. In 1925 this ranch had 94 cows, 2 bulls, 24 yearling heifers, 35 yearling steers and 177 two-year-old steers.

In 1924 this operator stated that he intended to "go slow on cows and calves" and use his pasture for steers for the most part until the breeding stock and calves got back on a better price basis. Acting

Over-grazing in early spring causes cattle to eat loco with disastrous results

on this principle in the summer of 1924 he bought 200 yearling steers which he sold in the fall of 1925. His financial statement indicates that he made a wise move. The wisdom of his decision is further borne out by this study as shown in table 18.

This ranch was operated almost entirely by the owner and his family. As shown in table 7 his average cash expense for labor per year was only $147.

One or two items on this farm helped to pull down his returns below what might have been secured. In 1924 he had a death loss on cows of 10.8 percent. This was largely due to its being a dry year. The effect of this dry year is also shown in the 1925 calf crop which was only 48 percent. Due to the small size of this ranch the operator ran only 379 head of cattle per man which was considerably below the average.

Another feature that operated to the disadvantage of this man was the number of unbroken horses carried and from which no income was realized. These 32 horses used considerable pasture that might have been used for cattle.

Table 37.—Organization and Returns—Ranch 58

	1924	1925
Land area, total acres	5,880	5,880
Owned land	4,600	4,600
Leased land	1,280	1,280
Grazing land	5,675	5,675
Crop and hay land	205	205
Investment, total	$29,000	$34,844
Land owned	13,737	13,737
Improvements	4,843	4,704
Equipment	1,775	1,511
Range cattle	7,195	13,540
Other livestock	1,450	1,352
Indebtedness, total	14,621	14,355
Operator's equity	14,379	20,489
Receipts, total	10,395	12,186
Cash receipts	3,974	12,064
Non-cash receipts	6,421	122
Expenses, total	8,634	10,929
[1] Cash expense	6,873	957
Non-cash expense	501	8,711
Unpaid labor	1,260	1,260
Net return on total investment	1,761	1,257
Interest paid on borrowed capital	862	842
Net return to owner's equity	899	415
Percent return to total investment	6.07	3.61
Percent return to owner's equity	3.10	1.19

[1] Not including interest paid.

SMALL DIVERSIFIED RANCH.—Ranch 41 shown in table 38 is also located in the 13 to 16-inch rainfall area. In 1922 and 1923 this ranch consisted of 2,080 acres of deeded land and 6,080 leased land but in 1924 only 3,520 acres were leased and in 1925 this was further cut down to 1,760 acres.

The crop and hay land amounted to 200 acres of irrigated land. The crops produced on the 200 acres were as follows: In 1922, 165 tons alfalfa hay, 5 tons native hay, 4000 pounds alfalfa seed and 1000 bushels of corn. The alfalfa seed was the only crop product sold and netted $420. In 1923, 85 tons of alfalfa hay, 15 tons of native hay, 300 bushels corn and 6,638 pounds alfalfa seed which sold for $797. In 1924, 130 tons alfalfa hay, 150 bushels oats, 300 bushels corn and 11,000 pounds alfalfa seed which sold for $1,650. In 1925, 45 tons alfalfa hay, 200 bushels corn, 100 bushels maize and 2,145 pounds alfalfa seed which sold for $275.

The poorer crop in 1925 was caused by an early flood that washed away a part of the irrigation system.

Table 39 shows how the various products on this ranch contributed to the cash income. It will be noted that this operator sold very few cattle in 1925 but sheep and wool sales show a great increase. The fact is that by the end of 1925 the cattle business began to look better, and having experienced a good deal of grief with the sheep this man cleaned out all his sheep and held all cattle except one carload of old cows.

An important phase of ranch life

The labor expense on this ranch was considerably higher than other ranches of a similar size. This was due in part no doubt to the fact that nearly all labor was hired, and also to the greater diversification.

The average rate of stocking was only 24 head per section, being much understocked the first two years.

The death loss on cows of 4.5 percent, average for the four years, was above the average for all ranches. In 1924 this ranch had a 7 percent loss on cows. The operator gave no definite reason or cause, but the record shows a smaller supply of supplementary feeds and the fact that 1924 was a dry season is brought out elsewhere.

Calf crops were low on this ranch, averaging only 45 percent. It may be stated in this connection that there was an average of 53 cows per bull. The calf crop in 1925, following the 1924 drought, was only 27 percent.

The results secured by this ranch seem to indicate that a man can diversify too much. Diversification no doubt is a guarantee against total loss in any one year but for a cowman it is doubtful if so many irons in the fire will pay good dividends. This seems particularly true where much dependence must be placed on hired labor.

Table 38.—Organization and Returns—Ranch 41

	1922	1923	1924	1925
Land area, total acres	8,160	8,160	5,600	3,840
Owned land	2,080	2,080	2,080	2,080
Leased land	6,080	6,080	3,520	1,760
Grazing land	7,960	7,960	5,400	3,640
Crop and hay land	200	200	200	200
Investment, total	$43,532	$41,708	$41,962	$40,839
Land owned	26,240	26,240	26,240	26,240
Improvements	5,040	4,888	4,736	4,583
Equipment	1,642	1,397	1,282	1,025
Range cattle	8,945	7,407	7,775	6,649
Other livestock	1,665	1,776	1,929	2,342
Indebtedness, total	2,545	2,662	4,478	5,692
Owner's equity	40,987	39,046	37,484	35,147
Total receipts	4,981	4,062	4,814	4,728
Cash receipts	4,870	3,541	4,331	4,176
Non-cash receipts	111	521	483	552
Total expense	5,050	3,216	4,307	4,624
[1] Cash expense	3,116	2,820	2,772	2,293
Non-cash expense	1,934	396	1,535	2,241
Unpaid labor	....	....	....	90
Net return on total investment	— 69	846	507	104
Interest paid on borrowed capital	204	213	358	455
Net return to owner's equity	— 273	633	149	— 351
Percent return on total investment	— .16	2.03	1.21	.25
Percent return to owner's equity	— .67	1.62	.40	—1.00

[1] Not including interest paid.

Table 39.—Cash Receipts on Ranch 41

	Amount of sales				
Year	Cattle	Hogs	Sheep and wool	Alfalfa seed	Poultry and dairy
1922	$3,664	$328	$ 173	$ 420	$285
1923	1,664	422	394	797	264
1924	2,011	149	437	1,650	84
1925	865	380	2,499	275	157

LARGE ECONOMICAL RANCH.—Table 40 gives the organization and returns on ranch 52 for three years. It was the policy of this operator to add to the deeded land from year to year as opportunities presented themselves to purchase small parcels from homesteaders.

This ranch is located in a part of the country with a rough broken topography where deep and wide canyons with their walls of rimrock form natural boundaries, thus eliminating a great part of the expense of fence building.

Very little farming was done on this ranch. The small amounts of roughage and some corn that were raised were used almost entirely for horses.

The opening inventory of cattle on this ranch at the beginning of 1923 shows 1,054 head of which 410 were breeding cows, 32 bulls, 222 heifers, yearlings and two-year-olds, and the balance, 390, were yearlings, two and three-year-old steers.

The count at the beginning of 1924 shows a total of 1,265 head and at the beginning of 1925 there were 1,622. At the end of 1925, however, the count was down to 1,152.

The number of she stuff, including the heifer calves, had increased by 180 head during this time while the number of steers had varied considerably due to purchases. In 1923 there were 325 steers bought and 300 sold at the end of that year. Again in the spring of 1924 there were 400 steers, mostly yearlings, bought. These were held until the fall of 1925 and sold with most of the two- and three-year-old steers that were raised on the ranch.

In the fall of 1925 a total of 634 steers were sold which shows up in the statement as nearly $34,000 cash receipts and also a non-cash expense of nearly $20,000 which represents for the most part a decrease in the total inventory value of cattle.

The relatively low operating expense on this ranch is the outstanding point. As shown in table 7 the average outlay for labor was $207 per year, this item being offset by the operator's and family's labor valued at $1,800.

Cottonseed cake was practically the only supplementary feed used, this being fed to cows, calves and bulls. Bulls are usually fed cake from January 1 until May 1. Calves are fed by themselves for periods varying from one month after dehorning to sometimes from December 15 to May 1.

Cows are not all fed cake but those in need of it are cut out from the others and fed. No steers were given cake except a small bunch in the spring of 1925. All cake is fed on grass except for the bulls. This was placed in troughs in the corrals.

Calf crops were relatively low on this ranch, averaging only 44 percent. This low average was due in large part to the dry season of 1924. The summer rainfall was less than one inch up to September 1, and the calf crop for 1925 dropped down to 34 percent.

The combination of economical operation, the practice of buying steers and the fairly large volume of business proved profitable for this operator.

Table 40.—Organization and Returns—Ranch 52

	1923	1924	1925
Land area, total acres	21,980	23,030	30,860
Owned land	8,440	8,880	9,680
Leased land	13,540	14,150	21,180
Grazing land	21,980	22,958	30,788
Crops and hay land	72	72	72
Investment, total	$66,237	$74,174	$88,961
Land owned	25,115	26,655	28,180
Improvements	4,053	3,947	3,841
Equipment	999	873	747
Range cattle	35,330	42,070	55,625
Other livestock	740	629	568
Indebtedness, total	26,400	39,820	44,643
Owner's equity	39,837	34,354	44,318
Total receipts	22,020	21,971	33,897
Cash receipts	15,280	8,106	33,897
Non-cash receipts	6,740	13,865	.....
Total expenses	17,751	20,300	27,656
[1] Cash expense	15,609	18,208	5,951
Non-cash expense	342	292	19,905
Unpaid labor	1,800	1,800	1,800
Net return on total investment	4,269	1,671	6,241
Interest paid	1,769	2,667	3,061
Net return to owner's equity	2,500	— 996	3,180
Percent return to total investment	6.44	2.25	7.02
Percent return to owner's equity	3.77	—1.34	3.58

[1] Not including interest paid.

LARGE RANCH OWNED LAND.—Table 41 shows the organization and returns on ranch 49 for the three years studied. This ranch is practically entirely owned by the operator. Only one section of land was leased the first two years and four sections the third year while 37,000 acres were owned. This resulted in a heavy investment in land. The investment in improvements on this ranch was also unusually heavy.

Four hundred acres were used for feed crops. The average production for three years was 1,130 bushels of corn, 810 tons of cane and maize fodder, and 20 or 30 tons of alfalfa and native hay.

On this ranch of approximately 60 sections the rate of stocking was about 38 head of cattle per section. Breeding cows received during the winter, in addition to grass, about 100 pounds cottonseed cake and 500 pounds of roughage made up largely of cane fodder.

Table 41.—Organization and Returns—Ranch 49

	1923	1924	1925
Land area, total acres	37,640	37,640	39,560
Owned land	37,000	37,000	37,000
Leased land	640	640	2,560
Grazing land	37,240	37,240	39,160
Crop and hay land	400	400	400
Investment, total	$459,337	$463,859	$456,234
Land owned	344,213	344,213	344,213
Improvements	25,787	25,184	24,581
Equipment	3,332	2,749	2,164
Range cattle	84,350	90,175	84,055
Other livestock	1,655	1,538	1,221
Indebtedness, total	$189,187	$195,825	$187,000
Owner's equity	$270,150	268,034	269,234
Total receipts	$ 29,822	27,413	37,526
Cash receipts	23,880	27,413	37,526
Non-cash receipts	5,942	.....	.....
Total expenses	$ 25,107	27,435	28,186
[1] Cash expense	23,019	18,635	21,831
Non-cash expense	1,188	7,625	5,605
Unpaid labor	900	1,175	750
Net return on total investment	$ 4,715	— 22	9,340
Interest paid on borrowed capital	$ 13,845	14,316	13,610
Net return to owner's equity	$—9,130	—14,338	—4,270
Percent return to total investment	1.03	—.01	2.05
Percent return to owner's equity	—3.38	—5.27	—1.58

[1] Not including interest paid.

To this liberal use of extra feed coupled with other factors such as a sufficient number of young vigorous bulls and good herd management must be attributed the good calf crop obtained on this ranch which averaged 68 percent as compared to 56 percent for all ranches. Death loss was also low on this ranch, being 1.3 percent on cows and 1.6 percent on the entire herd. Beef production per acre was one of the highest of the ranches in this study.

The quality of cattle produced was very good and the cattle sold from this ranch were held in high esteem by eastern feeders.

Practically the only source of income on this ranch was from cattle. Sales consisted mostly of cows, calves and yearling steers.

The operating expenses on this ranch were relatively high. The largest items in the expenses were taxes which averaged $7,342 per year; feed and salt, mostly cottonseed cake, $6,265; labor, $4,426; auto and other miscellaneous expense, $1,323.

This ranch illustrates the difficulties encountered in the cattle business where a man is operating a large outfit on high-priced land and in a locality where expenses are high. The cost of labor per month on this ranch was $72 as compared with $56 average for all

ranches. The taxes amounted to about $16 per thousand dollars invested as compared with $11 average for all ranches. This ranch is located in a county where the assessor lists all land as dry-farming land and none as grazing land. Inasmuch as the largest proportion of the land in this county is used for grazing, the higher assessed valuations due to calling all the land dry-farming land, places an excessive tax burden on the cattlemen.

MEDIUM SIZED PROFITABLE RANCH.—Table 42 gives the organization and returns on ranch 28. This ranch is somewhat smaller than the average of all ranches in this study and leases approximately 80 percent of the land used.

The outstanding thing about this ranch is that it consistently returned a profit during each of the four years that records were kept. No particular system or method of operating can be designated as the cause of this success except the fact that the operator devoted his time entirely to the care and management of his herd. No detail of importance was turned over to hired labor but was done by or under direct supervision of the operator himself.

Economy was the watchword at all times but not to the extent that it interfered with good sound ranch management.

This ranch is located in the 13- to 16-inch rainfall area and used about 50 acres for feed crop production which produced on the average about 45 tons of hay and cane fodder per year. This small amount of feed was supplemented by purchase of corn and sometimes roughage. Table 28 shows that this operator averages about 240 pounds of roughage and 130 pounds of corn per cow during the winter.

Cattle were practically the only source of income and the classes sold were yearling and two-year-old steers and old cows.

The rate of stocking was 25 head per section which is rather lower than the average. Death loss on cows averaged 2.7 percent and on the entire herd 2.2 percent. The calf crop was 67 percent as compared with 56 as the average for all ranches.

Table 42.—Organization and Returns—Ranch 28

	1922	1923	1924	1925
Land area, total acres	8,520	8,700	9,780	9,480
Owned land	1,840	1,840	1,840	1,840
Leased land	6,680	6,860	7,940	7,640
Grazing land	8,470	8,650	9,730	9,430
Crop and hay land	50	50	50	50
Investment, total	$28,841	$31,173	$33,999	$36,828
Owned land	12,827	12,827	12,827	12,827
Improvements	5,573	5,412	5,250	5,088
Equipment	318	336	284	304
Range cattle	9,698	12,237	15,341	18,376
Other livestock	425	361	297	233
Indebtedness, total	7,000	9,125	9,125	9,000
Owner's equity	21,841	22,048	24,874	27,828
Receipts, total	4,099	5,409	5,783	7,676
Cash receipts	1,560	2,305	2,550	7,676
Non-cash receipts	2,539	3,104	3,233	....
Expense, total	2,945	4,480	3,823	5,067
Cash expense	2,136	3,664	3,011	3,644
Non-cash expense	269	276	272	883
Operator's labor	540	540	540	540
Net return to total investment	1,154	929	1,960	2,609
Interest paid on borrowed capital	560	730	730	720
Net returns to owner's equity	594	199	1,230	1,889
Percent return to total investment	4.00	2.98	5.76	708
Percent return to owner's equity	2.06	.64	3.62	5.13