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THE UNIVERSITY OF NEVADA  
AGRICULTURAL EXPERIMENT STATION

Bulletin No. 124

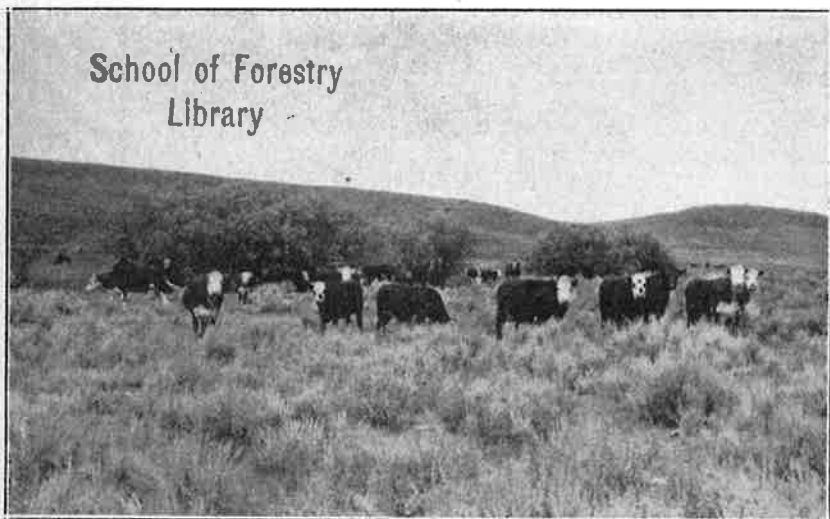
RENO, NEVADA

October, 1931

CATTLE PRODUCTION COSTS IN  
NEVADA IN THE YEARS  
1928, 1929 AND 1930

By  
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# NEVADA AGRICULTURAL EXPERIMENT STATION

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## SUMMARY OF AVERAGE COSTS FOR 1928, 1929 AND 1930

	PAGE
Automobile Account.....	14
The cost of running automobiles was \$1.07 for every gallon of gasoline consumed.	
Board and Lodging Account.....	17
Board and lodging cost was \$1.33 per day. Board and lodging supplies consumed cost \$0.81 per day.	
Pasture and Grazing Account.....	19, 20
Pasture and grazing cost of all livestock was \$1.36 per head, including young stock. A heavy investment per cow unit in grazing land, and expensive or extensive grazing leases, cause high pasture and grazing costs.	
Horse Account.....	22-25
The cost of feed consumed by horses was \$7.26 per head, or \$0.32 per horse day worked. Horse cost was \$0.43 per work day. On an average, each horse is used approximately 40 full days during the year.	
Handling Cattle Account.....	27, 28
The cost of handling cattle was \$2.55 per cow unit.	
Feeding Cattle Account.....	30
The cost of feeding cattle was \$1.97 per cow unit.	
Feeds for Cattle.....	32
Hay fed per cow unit.....	.94 tons \$5.71
Grain fed per cow unit.....	3.70 lbs. .06
Cottonecake fed per cow unit.....	44.72 lbs. 1.03
Salt fed per cow unit.....	7.08 lbs. .07
Pasture and grazing cost per cow unit.....	1.58
Total feed cost per cow unit.....	\$8.45
General Ranch Account.....	36
The net general ranch cost was \$2.29 per cow unit.	
Cattle Carrying Cost.....	39
The net carrying cost per cow unit was \$14.88. The cost of feeds and the amount of hand feed consumed largely determine whether the carrying cost is low or high.	
Bull Cost.....	41
On an average 24 breeding cows were run per serviceable bull. Approximately 10 per cent of the bulls of serviceable age were 7 years old or over.	
Bull cost per breeding cow was \$1.79, or \$2.80 per calf branded.	

Death Loss .....			42
	The death loss among all cattle was 3.10 per cent. Death loss among all bulls was 5.23 per cent and among bulls 7 years old and over it was 16.5 per cent.		
Calf Crop Percentage.....			44
	Calves were produced by 63.92 per cent of the breeding cows. This is figured on the occupancy head of cows and the number of calves branded.		
Cattle Production Costs .....			48
6 months calf.....	\$28.46 per head	\$0.077 per lb.	
Yearling .....	34.64 per head	.066 per lb.	
18 months.....	40.82 per head	.0596 per lb.	
Two-year-old .....	49.10 per head	.0528 per lb.	
30 months.....	57.39 per head	.0552 per lb.	
Three-year-old .....	65.82 per head	.0598 per lb.	

In round numbers a rancher having a \$17 cow maintenance cost and an 82 per cent calf crop produces six months old calves for \$7 per head less than he would with the same cost and only a 62 per cent calf crop.

Calf crop has its greatest influence on the initial cost of the calf.

Carying cost is the important factor affecting the production cost of cattle older than yearlings. In other words, carrying cost is more important than calf crop on the majority of ranches producing range cattle in Nevada.

# CATTLE PRODUCTION COSTS IN NEVADA

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The cattle ranch is a factory for the production of beef. The equipment necessary to produce the finished article consists of land, permanent improvements, machinery and equipment, bulls, breeding cows, horses, and such other livestock as sheep, hogs, and poultry in numbers considered necessary for efficient operation. Calves, heifers, yearlings, and two-year-old steers carried on the ranch are the raw product in the process of production. Heifers become a part of the required equipment at two years of age, as they replace aged cows. To keep the factory in operation requires managerial services, labor, administration expense, and the consumption of a wide variety of expendable parts and supplies.

With the settlement of the country and the passing of year-long forage on the open range, cattlemen have been compelled to grow an ever-increasing percentage of their own forage, which is pastured and hand fed. The march of progress, competition, changing conditions, and economic factors have forced them to acquire, fence, improve and operate more land. Therefore a heavier investment per unit is required in land, machinery, equipment, and in a better grade of cattle. With this added investment comes an increased cost in taxes, depreciation, and other overhead charges.

To keep this factory in operation requires the use of more labor and expendable parts and supplies for the production of feed and pasture. Irrigation ditches and laterals must be kept up, pastures reserved and meadows rehabilitated; hay and grain must be grown and hand fed to livestock during the winter months. Classification of stock cattle for grazing and feeding, and topping pastures with the beef, must be practiced. Young well-bred bulls must be used in sufficient numbers to insure a satisfactory calf crop of good breeding. Animal diseases, noxious weeds, and predatory animals must be controlled with more vigilance as outbreaks occur.

Irrigation streams are being adjudicated and stock water rights protected. The public taste wants a better product—younger beef with a higher degree of finish. The aged "horsey" type of longhorn steer is being replaced by his younger brother, eighteen to twenty-four months old, round and full in meat and flesh when finished for the shambles.

Both the character of the public appetite for beef and the economic conditions surrounding the ranch have changed rapidly in the past twenty years. These changing factors in the development of the industry have added materially to the cost of operating ranches and producing cattle. There was a time when a rancher could do all his own work on a saddle horse while depending upon the natural range resources; but this is rapidly becoming a thing of the past. A ranch manager of today must be a good executive, a shrewd business man, and a hard worker if he is to cope with the present economic conditions.

The successful operation of the cattle ranch of today requires:

- (1) A balanced unit—the right number of cattle for the size and the productivity of properly proportioned areas of ranch and range.
- (2) Skilled management and efficient ranch practices.

## PURPOSE OF THIS BULLETIN

The purpose of this bulletin is to set forth a general summary of the method used in obtaining ranch costs, to give the costs of the important ranch accounts, the cost of producing cattle, and to point out some of the main factors which cause variations in cost.

## SIZE, LOCATION, AND TYPE OF RANCHES STUDIED

This study was carried on during the years 1928, 1929 and 1930, and covered twenty-four cattle ranches, 26,411 head of cattle, and 271,539 acres of owned land. From this group twenty representative ranches

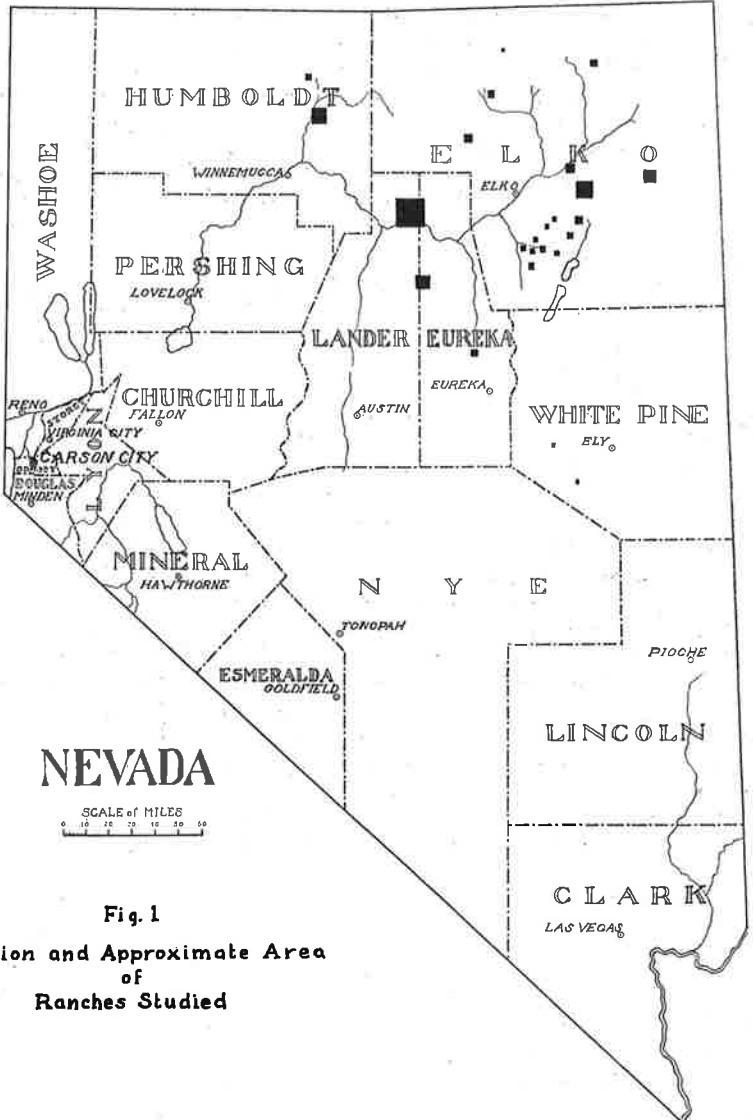


Fig. 1

Location and Approximate Area  
of  
Ranches Studied

were selected in order to present a fair average of costs. Ranches under study run from three hundred to four thousand head of cattle and are scattered in five large counties in eastern Nevada. They consist of ranches in the business of raising cattle, operating under the same general conditions, and were selected for the purpose of ascertaining the production costs involved on a straight cattle ranch. Modifications of operations are made in the different localities due to varying amounts of precipitation and length of grazing season.

The region studied produces 71 per cent of all the cattle produced in Nevada.

All of the ranches have winter quarters for feeding operations, and all of them produce hay. During spring, summer, and fall the cattle are grazed on open range; on the higher elevations during the summer months, and on the lower levels throughout the spring and fall. The altitude varies from 4,000 to 7,000 feet. Some ranchers do not run cattle on the Forest Reserve at all, and several have only small permits. The cattle are grazed on the open range for a period of three to nine months, depending upon location and available range feed. The remainder of the time the majority of cattle are run under fence on pasture or winter feeds.

The grazing areas, except for the higher summer ranges, are the Nevada sagebrush type. In this type of grazing, the following are the important grasses, weeds, grass-like plants, and browse in order of importance, according to their approximate feed value.

#### Grasses.

Blue bunch wheat grass.	Sixweeks fescue.
Giant wild rye.	Fendler bluegrass.
Slender wheat grass.	Sandberg bluegrass.
Field brome.	Nevada bluegrass.
Wheatlike wild rye.	Big bluegrass.
Idaho fescue.	Alpine timothy.

#### Grass-like Plants.

Hillside sedge.	Meadow sedge.
Elk sedge.	

#### Weeds.

Mountain wyethia.	Dandelion.
False yarrow.	Balsam root.
Large bluebell.	Geranium.
Small bluebell.	

#### Trees and Shrubs.

Mountain service berry.	Bitterbrush.
Yellowbrush.	Red elder.
Mountain mahogany.	Willow.
Mountain snowberry.	Western chokecherry.
Lance-leaf yellowbrush.	Fendler rose.

Harvest crop lands, ranch pasture, and grazing lands are necessary for cattle production in northeastern Nevada. The so-called wild hay meadows are composed mainly of timothy, red-top, wild and tame clover, and sedges, with a scattering of native grasses. Some alfalfa is

grown on a few ranches favorably situated. The irrigated pasture lands produce much the same grasses as the wild hay meadows. The plant composition of other pasture land is of the same type as the grazing areas in general.

#### **METHOD AND PROCEDURE USED IN OBTAINING RANCH COSTS**

There are so many different systems of bookkeeping and so many methods of interpreting cost figures after they are collected, that it was necessary to establish certain fundamental rules which must be adhered to throughout the investigation. The method to be adopted depends largely upon what the figures are intended to show. In this project the desire was to keep away from all hidden or paper profits, to put all ranches on an equal basis, and to find the direct as well as



**Fig. 2. Typical Summer Range in the Ruby Mountains.**

the indirect costs in the production of cattle. The following are a few of the more important principles adopted.

#### **Interest.**

The costs in this bulletin are exclusive of all interest charges. However, an inventory was kept of all livestock, land, machinery and equipment, so that valuations could be calculated to see what interest was earned on the investment, and for computing the earning power of land.

#### **Prices Used.**

Prices were established, exclusive of interest charges, on all livestock and food produced on the ranch for ranch consumption. These prices (Appendix 5-8) were kept at a constant figure in order to keep away from any paper profit due to fluctuations in value. As this bulletin deals only with the production cost of cattle, exclusive of interest, the prices thus established do not enter into the calculations except in

cases where such produce was directly consumed in the production of cattle—ranch produced beef used in board and lodging, ranch produced grain fed to livestock, etc.

#### Unpaid Labor.

Unpaid labor and unpaid managers are allowed a wage or salary in keeping with paid labor and paid managers, according to the work performed. (Appendix 1, 2).

#### Counts of Cattle—Occupancy Head.

Cattle were counted at the beginning and end of each year. However, due to purchases and sales during the year, neither of these counts will give the correct number of head on the ranch a full year. All classes of cattle were therefore placed on an occupancy basis, taking purchases and sales into consideration, in order to find the number of head of each class on the ranch a full year. The total occupancy head was the basis taken for figuring the percentage of death loss that had occurred during the year and the occupancy head of cows was used in figuring calf crop percentage.

#### Cow Unit.

A cow unit is a mature cow on the ranch a full year. The unit values used are:

1 mature cow.....	1 cow unit
1 branded calf or weaner.....	$\frac{1}{2}$ cow unit
1 yearling.....	$\frac{2}{3}$ cow unit
1 two-year-old steer.....	1 cow unit
1 beef steer.....	$1\frac{1}{4}$ cow units
1 bull.....	$1\frac{1}{2}$ cow units

Multiplying the occupancy head of each class of cattle by its unit value gives the number of cow units.

#### Purchased Cattle.

Cattle bought to build up the herd may cost more or less than production cost. If more the difference becomes a charge, if less a credit, to carrying cost. The difference between production cost and purchase price is handled in the same way as depreciation and spread over a period of years as a charge or credit covering the probable length of time the animal will be on the ranch. The cattle ranches presented make very few transactions of this character.

#### Charges and Credits.

Cattle and hay are the two big crops produced by Nevada cattle ranches. All other accounts are considered subsidiary to their production. Receipts, refunds, and inventory increases pertinent to such other accounts are credited to each respectively, giving the net cost. The hay is usually consumed by cattle at production cost, therefore the bulk of the receipts are derived from the cattle. However, revenue from both cattle and hay is credited to ranch profit or loss.

#### Raised Bulls.

A few ranchers operate a small registered herd and a good many run a few pure bred cows from which they produce a part of their stock bulls. At weaning time the production cost of these bulls is credited to carrying cost and charged to the bull account because some may

later be sold as herd bulls and such receipts are credited directly to bulls. If any bulls should die their loss would be charged to the bull account.

#### Distribution of Costs.

Cost items entering into ranch accounts are charged on the basis of use. Items such as labor, board and lodging, use of horses, haying extras, and feeds consumed, where the cost is exclusively for one operation, are **kept separate and charged direct**. Depreciation, use of automobiles, **general supplies and repairs**, where the use and cost pertain to several operations, are allocated to each as nearly as possible on the basis of percentage of use. This procedure is necessary because of the overlapping of some accounts. Its application may cause slight cost variations as between the segregated accounts; however, the carrying cost and cattle production cost would not be affected.

#### Averages.

Weighted averages are used in all average ranch computations; that is, total costs are divided by total units to find unit cost.

### METHOD OF COLLECTING DATA

The Station entered into cooperative relationships with the cattlemen, through a term of years, in keeping actual records of all the factors entering into the cost of producing beef cattle for market. A field man visited the ranches on each route frequently, supervised the work, and assisted in keeping the books. These records were kept in a Time Book, Day Book, and Inventory. The data herewith presented are compilations and analyses made from these records.

### DATA COLLECTED

Operation costs and physical data are entered under the following subdivisions:

#### Overhead Costs.

*Insurance* on buildings, machinery and equipment, charged directly to the item insured.

*Taxes*, both State and county, on ranch property, livestock tax and water tax, charged to the item taxed.

*Depreciation* on permanent improvements, machinery and equipment, computed by dividing the original cost of the item by its probable life, charged as nearly as possible to the account using such improvement or equipment.

*Miscellaneous Management* expense includes express, transportation, telephone, association dues, subscriptions to farm papers, and such other expenses as cannot be charged directly to any specific ranch operation. Such charges are therefore percentaged off to the various accounts.

*Special Administrative Costs* of considerable consequence, such as law suits, questions of title, etc., are not charged to any one year but are prorated over a number of years, depending on the nature of the

expense. This computation is made on the basis that the charge should be spread over its period of value to the ranch.

#### Labor.

*Management Salary* consists of paid and unpaid management salary. Unpaid ranch managers are allowed salaries comparable with paid managers holding similar positions (Appendix 2). All managers are allowed the regular going wage for ordinary labor. This amount is deducted from the manager's salary and charged to the work performed. The remainder of the manager's salary is prorated to the various ranch accounts according to the total days spent in each division.

*Labor* includes paid and unpaid labor chargeable to the several accounts on the basis of cost and days worked. Monthly time sheets are kept on labor, dividing the days worked into the proper accounts.

*Labor Insurance* consists of industrial insurance premiums paid on labor, and is charged to the various accounts according to the labor days.

*Horse Labor.* Horse days are kept track of and charged in the same manner as man labor days.

#### Parts and Supplies.

These include such items as fencing, board, haying extras, automobile parts, and gasoline, charged to their respective accounts. Other parts and supplies are allocated to the several accounts according to their percentage of use.

#### Feeds.

A record of the amount of each class of feed consumed by cattle, horses and other livestock is kept and such feeds are charged in at purchase price or production cost. (Appendix 5).

### EXPLANATION OF MINOR ACCOUNTS

Charges from the above subdivisions made up the following minor accounts:

*Automobile* cost for all purposes is computed on the basis of total gallons of gasoline consumed. Records of the gallons of gasoline used in automobiles for ranch use and pleasure are kept. The percentage of use of automobiles for the different ranch purposes is then estimated and the cost prorated to the various accounts.

*Board and Lodging* cost per day is computed and charged to the respective accounts on the basis of days worked. Board for members of the family not working is not included in the production cost of cattle.

*Pasture and Grazing* charges are kept and allocated to cattle, horses, and other livestock on a head basis.

*Horse Costs* per day for all purposes are computed and charged to the different accounts on the basis of days worked.

*Carry-Over Charges.* Costs entering into the construction of permanent improvements and the production of feeds carried over do not

enter into the current year costs; accordingly such costs per cow unit and the total costs charged in various accounts to the current year are not one and the same thing. This principle applies to automobile, labor, board and lodging, horse costs, etc.

#### EXPLANATION OF MAJOR ACCOUNTS

The above Minor Accounts, together with all direct charges, make up the following Major Ranch Accounts, which in turn make up the two main cost divisions:

- A. The Cost of Producing Hay.
1. The cost of growing hay.
  2. The cost of haying.
- (A separate bulletin will be published on the cost of producing hay.)
- B. Carrying Cost of Cattle.
1. The cost of handling cattle.
  2. The cost of feeding cattle.
  3. The cost of feeds for cattle.
  4. The cost of general ranch operation.
  5. Cost of purchased breeding stock.
  6. Ranch produced bulls sold to bull account.

*Bull Cost* is found by multiplying the number of bull units by the carrying cost per unit, plus bull depreciation and death loss. This figure is divided by the number of breeding cows to give the bull cost per cow.

*Cost of Production of Cattle.* The carrying cost per cow unit, combined with bull cost per cow, death loss cost, and calf crop percentage, give the cost of production of the various ages of cattle.

#### MINOR ACCOUNTS

##### The Cost of Running Automobiles.

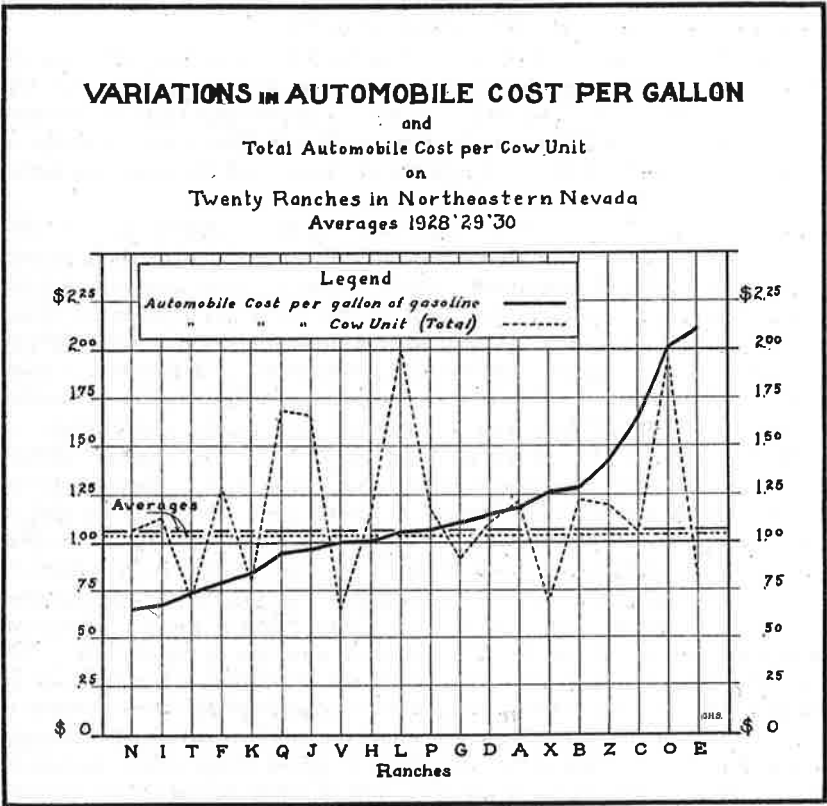
The automobile account includes the total cost of all automobiles for the year both for ranch purposes and pleasure. The cost for ranch purposes is charged to the various accounts on a percentage of use basis. The pleasure cost is charged to personal expense.

The automobile has replaced the horse for trucking and transportation to and from the ranch. Horses must still be carried to do most of the ranch work. The advent of the automobile has created a new ranch expense. Its use from a practical standpoint has to be justified by speeding up efficiency in saving time, hauling more tonnage, and the like.

AVERAGE COSTS PER GALLON	
Overhead.....	\$0.52
Parts and supplies (oil and repairs).....	.27
Gasoline.....	.25
Management salary.....	.03
Total cost per gallon.....	\$1.07

This average cost per gallon \$1.07, divided by 12, the average miles per gallon, equals \$0.089, the average cost per mile.

Chart Number 1



**TABLE NO. 1**  
Variations in Automobile Costs

Ranch	Cost per gallon	Costs PER COW UNIT		
		Total	Pleasure	Ranch use
N.....	\$0.65	\$1.07	\$0.57	\$0.50
I.....	.67	1.13	.17	.96
T.....	.74	.71	.02	.69
F.....	.79	1.30	.20	1.10
K.....	.84	.79	.12	.67
Q.....	.95	1.69	.12	1.57
J.....	.97	1.66	.30	1.36
V.....	1.00	.65	.....	.65
H.....	1.00	1.16	.19	.97
L.....	1.06	2.00	.58	1.42
P.....	1.07	1.17	.33	.84
G.....	1.11	.92	.01	.91
D.....	1.15	1.11	.26	.85
A.....	1.19	1.22	.07	1.15
X.....	1.26	.68	.....	.68
B.....	1.29	1.23	.15	1.08
Z.....	1.43	1.20	.05	1.15
C.....	1.65	1.06	.51	.55
O.....	2.01	1.96	.46	1.50
E.....	2.12	.81	.24	.57
Average.....	\$1.07	\$1.04	\$0.16	\$0.88

The foregoing table shows that the automobile cost per gallon varies from \$0.65 to \$2.12, with the average at \$1.07.

There are too many variable factors which cause this difference to permit any definite conclusion regarding use of automobiles. A few of the variables are: Difference in size, number and type of automobiles, number of cow units, miles from railroad, kind and condition of roads, size and distribution of ranch and range, and the personal factor which governs the use of the car.

However, there are a few points well worth consideration. Cattle ranchers' investment in automobiles, when compared with their investment in other ranch machinery, often appears heavy and out of line. For instance, twenty-eight per cent of the total investment in ranch machinery and equipment is tied up in automobiles and trucks. When compared to other ranch machinery, automobiles and trucks are comparatively short-lived. At best, depreciation is a big factor. Careful consideration should be given to proposed use before purchasing. A touring car doing the work of a truck is expensive transportation. Big cars operated over rough mountain roads quite often could be replaced with lighter machines at a lower cost. In fact, the use of any car for a purpose to which it is not suited is costly. The automobile, unless judiciously used on cattle ranches, proves to be a burden.

Other things being equal, the majority of ranchers near trading centers have more auto travel than those farther away. Frequent trips to town are made for repairs and supplies in small lots. The ranchers farther away plan ahead, make occasional trips and lay in supplies in large amounts, thereby reducing automobile transportation.

Some part of the automobile cost finds its way into all ranch accounts, either directly or indirectly. It is first charged to the minor accounts, such as Board, Pasture, and Horses, and as these accounts are carried into the major accounts a part of the automobile cost goes with them. Then too, these major accounts, Feeding Cattle, Handling Cattle, Producing Hay, and General Ranch, all receive their share of the automobile cost as a direct charge.

It can be easily seen that the total automobile cost, like other total minor costs, becomes interwoven in carrying cost to such an extent that it is not practical to find the total amount of such minor costs which is included in carrying cost for the year. However, the ranch must pay for the automobile, whether it is charged to carry-over hay, to permanent improvements, or to hay directly consumed during the year. Therefore, the total cost of the automobile was divided by the total cow units, giving the cost per cow unit. This cost varies from \$0.65 to \$2, averaging \$1.04 per cow unit. Of this total cost, \$0.88 is charged to Ranch Operation and \$0.16 to Personal.

#### **The Cost of Board and Lodging.**

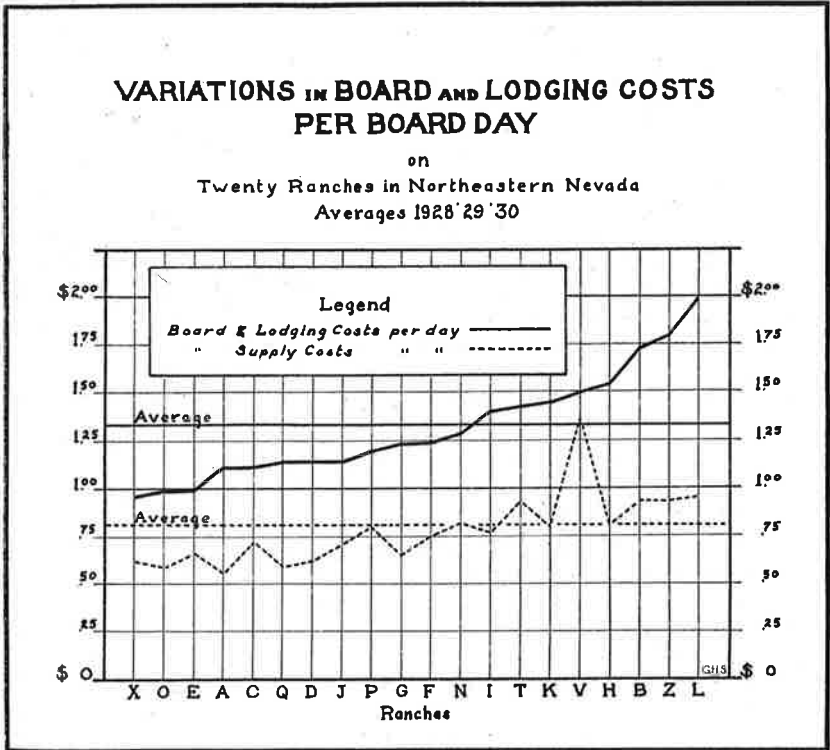
The cost of board and lodging per day is based on all ranch labor days, together with family and personal board and lodging days. All cooks' wages are entered directly to board and lodging. Ranch produced food supplies are charged in to board at production cost (Appendix 8). Board and lodging costs are then charged to the various accounts on the basis of labor days worked.

AVERAGE BOARD AND LODGING COST PER DAY

Overhead.....	\$0.18
Labor.....	.33
Management salary.....	.02
Food supplies.....	.81
Gasoline for lights.....	.01
Automobile (.045 gals. per day x \$1.07 per gal.).....	.05
Gross cost per board day.....	\$1.40
Credits: Receipts from meals, food supplies.....	.07
Net cost per board day.....	\$1.33

The most important item entering into this account is the value of food supplies consumed during the year. To this cost cooks' wages, overhead, etc., are added, making up the total cost.

Chart Number 2



**TABLE NO. 2**  
Variations in Board and Lodging Costs Per Day

Ranch	Food supplies	Total	Ranch	Food supplies	Total
X .....	\$0.62	\$0.96	F .....	\$0.75	\$1.24
O .....	.58	.98	N .....	.82	1.28
E .....	.66	.99	I .....	.77	1.41
A .....	.55	1.11	T .....	.93	1.43
C .....	.72	1.12	K .....	.80	1.45
Q .....	.58	1.14	V .....	1.37	1.50
D .....	.62	1.14	H .....	.81	1.54
J .....	.71	1.14	B .....	.94	1.73
P .....	.80	1.20	Z .....	.94	1.79
G .....	.65	1.23	L .....	.96	2.00

Board and lodging cost varies for \$0.96 to \$2 per day. The average cost of \$1.33 per day, or \$40 a month for each person, over and above wages, runs labor cost up to a figure that is not generally realized. With monthly wages approximating \$50 and food, total labor cost averages \$90 per month.

Board and lodging supply cost includes both purchased and produced items. The account consists of food supplies, such as groceries, dairy, poultry, and garden products, together with expendable supply items such as dishes, bedding, fuel, etc. Board and lodging supply cost varies from \$0.55 to \$1.37, with an average of \$0.81 per day.

All ranches produced the bulk of the meats consumed. The great majority produced dairy and poultry products in quantities sufficient for home consumption. Out of this representative group of twenty ranches, seven maintained good home gardens, seven had gardens of little consequence, and six had none at all. In some instances location and conditions were not adaptable to gardens. One ranch produced no home grown food supplies whatever, with the exception of beef. Groceries, dairy, poultry and garden products were all purchased. This ranch made more than the customary replacement purchases of kitchen utensils and dishes. Including such purchases its board and lodging supply cost was \$1.37 per day, which is \$0.56 above the average. It is difficult to establish the amount of customary replacements of this nature; however, it is clearly evident that a good share of this cost is attributed to the fact that all food supplies, excepting beef, were purchased. Buying dairy and poultry products was especially costly.

Since each ranch carries the expense of board and lodging for family and personal days, as well as labor, cow unit costs are given to point out the significance of this account to the complete ranch operation under existing conditions. These are average figures for the twenty ranches:

	Board days per cow unit	Board cost per day	Board cost per cow unit
Labor board days.....	1.95	\$1.33	\$2.60
Family and personal days.....	.54	1.33	.72
Total board days.....	2.49	\$1.33	\$3.32

The \$3.32 per cow unit is the total cost for all board and lodging, and is not shown again because part of it is in carry-overs and part in minor accounts, as explained under the Cost of Running Automobiles.

Investments in elaborate dwellings, mess and bunk houses, store rooms, etc., add to depreciation, upkeep, and repair costs, which are reflected directly in board and lodging. Simple, comfortable, and durable ranch houses are the most economical in the long run. In many cases all meals are prepared and served in the ranch house, eliminating the need of a mess house. On the majority of ranches the cattleman's wife does most of the cooking. This is particularly true on ranches running under 1,000 head of cattle. The housewife maintains a home, works with the chickens and garden, and in addition cooks for the hired help. In the successful operation of many outfits much credit is due to the housewife, whose prudent management, skillful hands, and capacity for work make the ranch a home as well as a place to live.

Volume production involves more labor, with more board days per cook, which lowers board cost per day. Small outfits which require a cook for very few men can hardly escape a comparatively high board and lodging cost per day.

Home grown garden produce in quantities sufficient for ranch use is desirable, probably more from the standpoint of variety, better living, and convenience, than cost. In most instances such produce amply provides the table with food which would be served sparingly if purchased. If conditions permit, all ranchers should produce most of their dairy, poultry, and garden products.

Meat plays a very important part in the ranch diet. Keeping meats during hot weather is quite a problem. Exchange of meat with neighbors, corning and curing are remedies practiced to check this leak. They are timely jobs and if neglected prove costly. The slaughtering of mature animals for ranch use is undoubtedly good economy where meat in such quantities can be taken care of and utilized.

Food waste due to poor cooks, neglect, and poor storage facilities causes board costs to go up. A good cook has more responsibility in holding board costs in line than is generally realized.

#### Pasture and Grazing Account.

All livestock are grazed in common on the ranch. Horses, sheep, and



Fig. 3. Garden Produce for Ranch Use.

small livestock are grazed in numbers considered sufficient to run the ranch. Pasture and grazing costs are allocated to cattle, horses, and other livestock on the basis of use and number grazed. To establish a basic unit for this account, five head of sheep or other small livestock are considered equal to one horse or cow, irrespective of age.

This pasture cost does not take into account cut-over hay land that is grazed by stock. The reason for this is that all taxes on hay land were charged against hay and all fence repair against pasture, because it was assumed that the amount of each chargeable to the other would balance and thus save the complication of dividing them on a use basis.

#### PHYSICAL DATA

<i>Variable Factors</i>		<i>Unit Costs</i>	
Labor days per head.....	.0626	Average wage per day.....	\$1.879
Board and lodging days per head..	.0626	Average board cost per day...	1.33
Gallons of gas used in autos.....	.06	Auto cost per gallon.....	1.07
Horse days per head.....	.04	Horse cost per day.....	.43

AVERAGE PASTURE AND GRAZING COST PER HEAD

Overhead.....	\$0.63
Labor—days x wage per day.....	.12
Management salary.....	.05
Labor insurance.....	.....
Board—days x cost per day.....	.08
Parts and supplies.....	.05
Automobile—gals. x cost per gal.....	.06
Horses—days x cost per day.....	.02
Grazing leases and fees.....	.38
<hr/>	
Gross cost per head.....	\$1.39
Credits (sales of pasture).....	.03
<hr/>	
Net cost of pasture and grazing.....	\$1.36

Under the heading of leases and fees have been included all charges for grazing that had to be obtained outside the ranch proper, *i. e.*, forest fees, short time leases, etc. These leases were generally for only a comparatively short period of time and did not include all the cattle on any ranch. However, these charges were allocated to the entire herd.

Chart Number 3

VARIATIONS IN PASTURE AND GRAZING COSTS PER HEAD

on  
Twenty Ranches in Northeastern Nevada  
Averages 1928 '29 '30

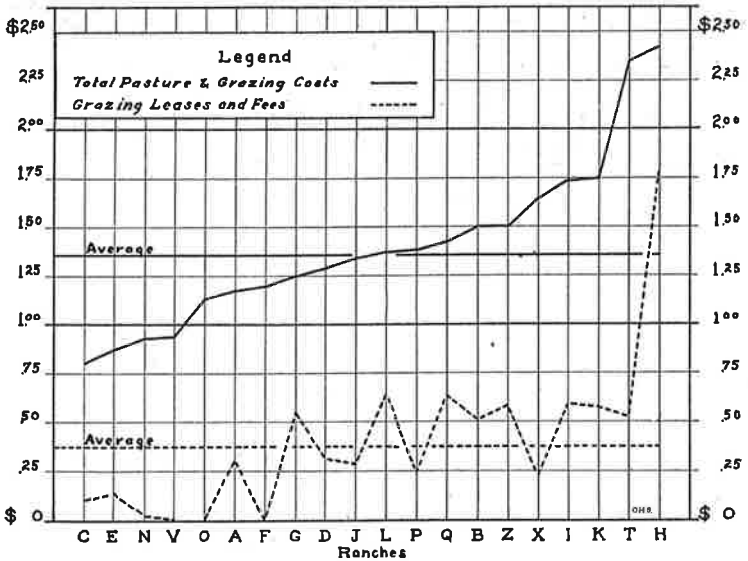


TABLE NO. 3  
Variations in Pasture and Grazing Costs Per Head

Ranch	Leases and forest fees	Total	Ranch	Leases and forest fees	Total
C	\$0.11	\$0.80	L	\$0.65	\$1.37
E	.14	.87	P	.24	1.38
N	.02	.93	Q	.64	1.42
V	.....	.94	B	.51	1.50
O	.....	1.13	Z	.58	1.50
A	.31	1.17	X	.23	1.64
F	.....	1.20	I	.60	1.74
G	.55	1.25	K	.58	1.75
D	.32	1.29	T	.53	2.35
J	.29	1.34	H	1.80	2.42

Pasture and grazing costs run from \$0.80 to \$2.42 per head, with an average of \$1.36. The cost of grazing leases and fees has also been charted to show the direct relationship it has to the increase in pasture

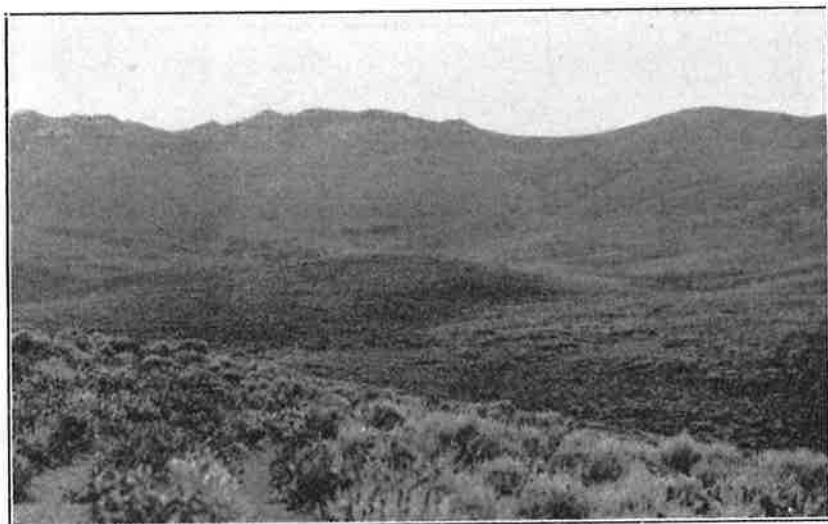


Fig. 4. Summer Range in Eastern Nevada.

and grazing costs. Ranches not favorably located with respect to the use of the public range are obliged to lease grazing lands or purchase pasture, oftentimes at costs which prohibit economic production. Grazing and pasture privileges, together with pasture costs on the ranch proper, constitute the total pasture and grazing account.

The cattle business does not warrant high pasture and grazing costs. Many of the cattle are grazed on the public domain. If pasture and grazing costs are high, then hand feeds and their cost should be correspondingly low in order to equalize the total feed cost. When both grazing and hand feeds are high it is difficult, if not impossible, to lower other ranch operation costs sufficiently to offset this handicap.

The amount of owned land per cow unit, carrying capacity, type of range, and length of grazing season bear heavily on pasture and grazing costs. Heavy investment in land causes increased overhead costs,

which are difficult to overcome. As a safeguard in the production of cattle, only enough land should be owned to provide fairly good control of feed and water. Buying more land, unless it materially speeds up production volume or efficiency, is apt to turn out an unsuccessful venture. Adding to capital investment unless new revenue is derived increases production costs and lowers profits.

Foresight is of prime importance in the grazing of cattle. Gains off grass are the cheapest; in fact, that is where the money in the range cattle business is made. The fields should first be topped with the beef turnoff, then followed with other classes of cattle which in turn are most in need of especially good feed. If possible, some good grass fields should be reserved for late fall and early spring grazing. Their use will reduce the amount of hay necessary to winter the cattle.

Outfits that can run their cattle on fairly good open range for five or six months out of the year have a decided advantage over those with

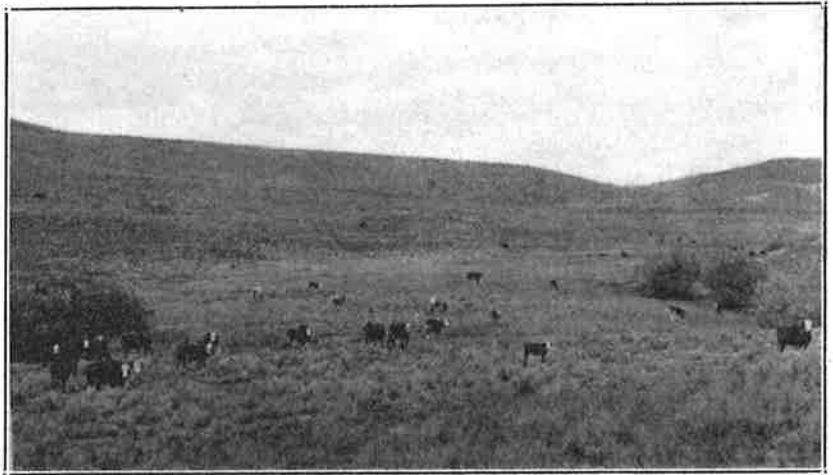


Fig. 5. Range Cattle on Mountain Meadows.

a short grazing season. While cattle are grazing on the open range, fields are rested, feed is conserved, and handling costs are usually reduced.

Classification of stock cattle should be practiced, giving the best location, with respect to feed, water, and shelter, to those classes most in need of special care.

#### HORSE ACCOUNT

##### Feed for Horses.

The cost of feed for horses consists of the amounts and costs of hay, grain, and salt consumed by horses, together with pasture and grazing costs per head.

Variable Factors		Unit Costs	
Hay fed per head.....	.706 tons	Cost per ton of hay.....	\$6.956
Grain fed per head.....	51.24 lbs.	Cost per lb. of grain.....	.0168
Salt fed per head.....	5.64 lbs.	Cost per lb. of salt.....	.0106

AVERAGE COST PER HEAD OF FEED FOR HORSES

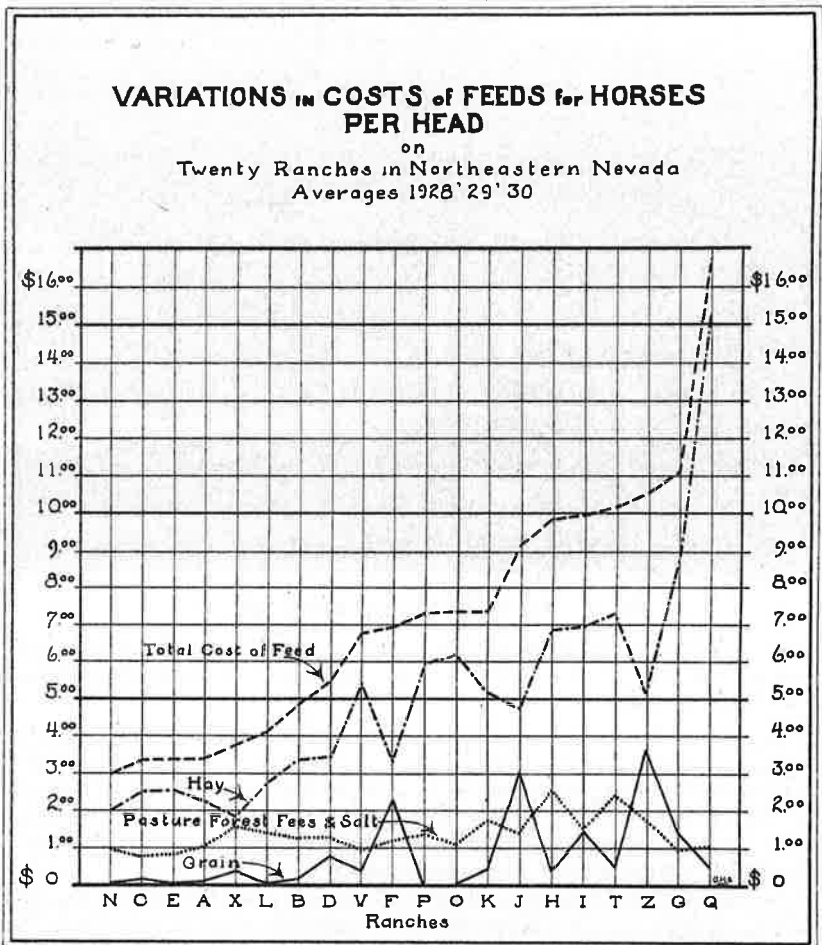
Hay—tons fed x cost per ton.....	\$4.91
Grain—lbs. fed x cost per lb.....	.86
Salt—lbs. fed x cost per lb.....	.06
Pasture and grazing.....	\$1.38
Forest fees.....	.05
	1.43

Total cost per head of feed for horses..... \$7.26

Feed cost per head \$7.26, divided by horse days worked per head 22.59, equals feed cost per horse day \$0.32. Horse feed represents the largest single item entering into the horse account.

There is a great variation from the average in the amount of feeds given horses per head. For instance, the tons of hay vary from .30 tons to 2.16 tons; the pounds of grain from .00 to 200 pounds, and the salt from .06 to 12.80 pounds.

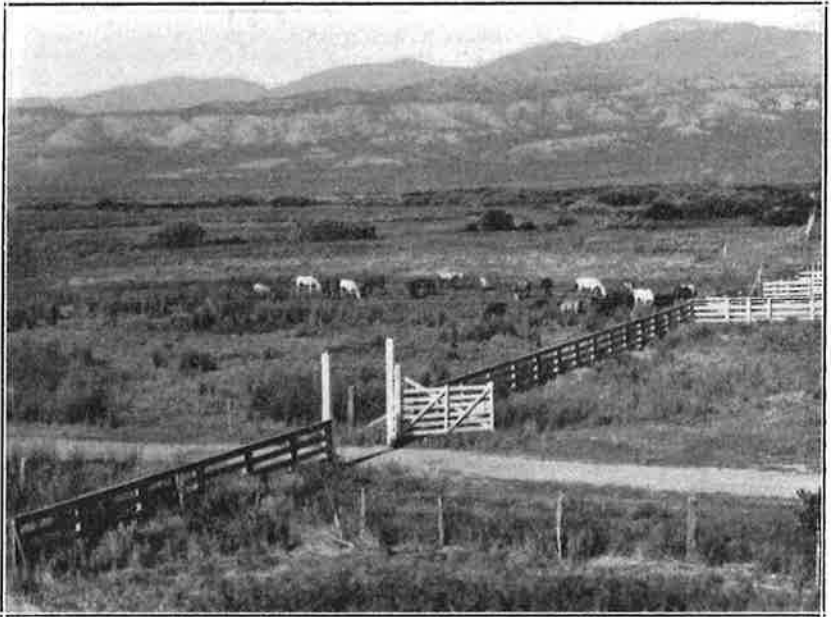
Chart Number 4



**TABLE NO. 4**  
**Variations in Feed Costs Per Head for Horses**

Ranch	Hay	Salt pasture			Ranch	Hay	Salt pasture		
		Grain	F. fees	Total			Grain	F. fees	Total
N	\$2.04		\$0.93	\$2.97	P	\$5.91		\$1.39	\$7.30
C	2.48	\$0.13	.75	3.36	O	6.20		1.13	7.33
E	2.55		.82	3.37	K	5.14	\$0.42	1.77	7.33
A	2.26	.09	1.04	3.38	J	4.78	3.01	1.41	9.15
X	1.81	.35	1.55	3.71	H	6.83	.39	2.59	9.81
L	2.70		1.40	4.10	I	6.96	1.44	1.54	9.94
B	3.37	.16	1.29	4.82	T	7.26	.48	2.43	10.19
D	3.42	.75	1.30	5.47	Z	5.12	3.67	1.74	10.53
V	5.42	.38	.97	6.77	G	8.73	1.42	.95	11.10
F	3.37	2.29	1.24	6.90	Q	15.29	.50	1.01	16.80

Variations in grazing conditions surrounding the ranches cause wide differences in the amounts of hand feeds required. Total feed cost per



**Fig. 6. Modern Corrals and Horse Pasture.**

horse varied from \$2.97 to \$16.80. The average is \$7.26. The accompanying chart on feed cost for horses illustrates the wide fluctuations on various ranches.

The cost per head of hay, grain, and pasture consumed varies in this account from production costs because a percentage of such feeds were purchased at figures below or above production cost. With few exceptions horses are grazed either on the open range or in pastures as much as possible. A few are ranged in the Forest Reserve, and this cost is allocated to all horses on a per head basis.

The difference in the amount of feed given horses is very noticeable. With seemingly equal conditions some ranchers feed horses from ten

to fifty per cent more hay and over twice as much grain as others in turning out practically the same amount of work during the year. This difference can generally be accounted for in the method of carrying the horses through the idle seasons, or it may be due to the time of year when run-out meadows or stubble fields are plowed up preparatory to spring seeding, in order to maintain hay and grain production. The preparation of land in summer or fall almost invariably reduces horse cost. In the fall after the haying season the horses are hardened and in good condition for heavy work. When the fall work is over the horses can be put out on pasture roughage, supplemented with straw and a minimum amount of hay for a short time during the severe winter weather. In the spring they will freshen up quickly on grass and be ready for the haying season. If the plowing and heavy crop work is left until spring the horses must be well fed throughout the winter to put them in good shape for hard spring work. In the spring the horses are soft; it usually requires more horses to do the work, more hay and grain are consumed, and the cost of feeding goes up.

Most ranchers feed and grow out their best colts very well, knowing that it takes feed to produce good work stock.

On comparing ranches, some carry mature work stock through the idle seasons on a maintenance ration of roughage and cheap feeds at a cost much lower than others. Horses are used in practically every ranch operation; hence, when the horse cost is high the cost of producing hay, handling cattle, feeding cattle, and general ranch costs all go up accordingly. Most ranchers, by planning their work, can carry mature horses through idle seasons at a comparatively low cost with no apparent ill effects.

#### Horse Cost.

The total horse costs are obtained by adding feed cost, overhead, and other pertinent items as listed below. In the main, horses are broken while at work. Accordingly labor cost for this purpose is charged to the various ranch accounts for which the work is done.

A horse day represents a full day's work for one horse, or its equivalent if horses are changed during the day.

PHYSICAL DATA		Unit Costs
<i>Variable Factors</i>		
Auto gals. per horse day.....	.022	Auto cost per gallon..... \$1.07
		Feed cost per horse day..... .32
AVERAGE COSTS PER HORSE DAY		
Overhead.....		\$0.10
Management salary.....		.04
Parts and supplies.....		.03
Auto—gals. x cost per gal.....		.02
Feed.....		.32
Gross cost.....		\$0.51
Credits (inventory increase, sales).....		.08
Net cost per horse day.....		\$0.43

Chart Number 5

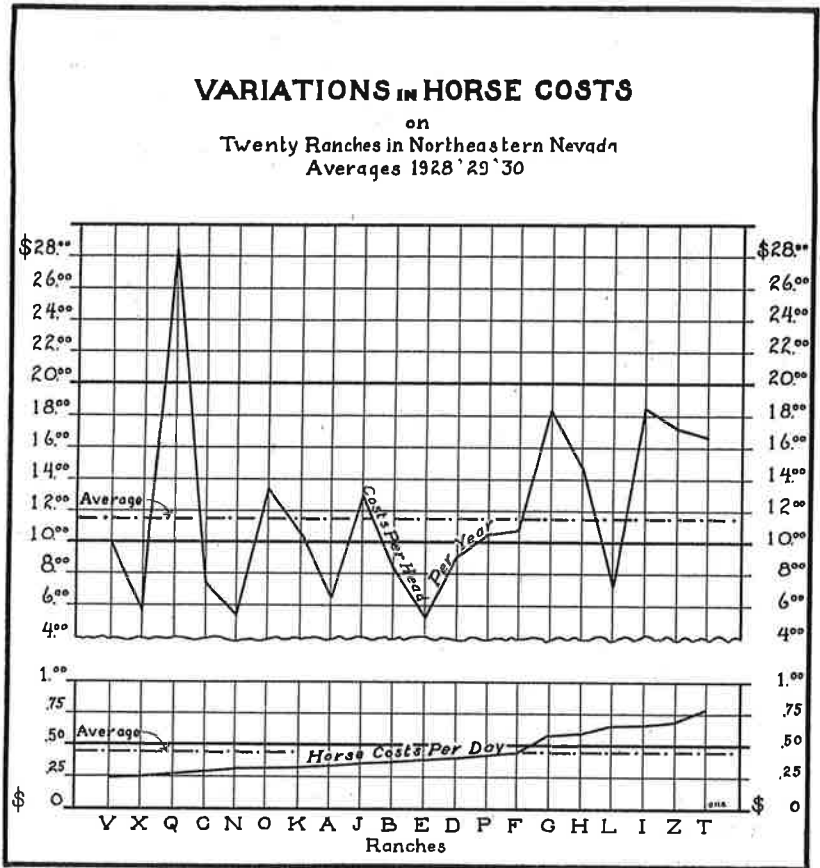


TABLE NO. 5  
Variations in Horse Costs

Ranch	Cost per day	Cost per head	Ranch	Cost per day	Cost per head
V .....	\$0.24	\$9.25	E .....	\$0.39	\$5.29
X .....	.25	5.50	D .....	.40	9.12
Q .....	.27	28.64	P .....	.42	10.56
G .....	.28	7.36	F .....	.45	10.73
N .....	.31	5.19	G .....	.58	18.37
O .....	.32	13.32	H .....	.59	14.75
K .....	.33	10.55	L .....	.66	7.30
A .....	.34	6.55	I .....	.67	18.47
J .....	.36	12.97	Z .....	.69	17.36
B .....	.37	8.41	T .....	.78	16.72

The cost of a horse day varies from \$0.24 to \$0.78 per day, with an average of \$0.43. This difference is caused by variations in methods of handling and feeding, and in the number of horses carried. The total number of horses carried consists of work stock, saddle stock, breeding stock, and colts coming on in numbers sufficient to fulfill replacement requirements, except in one or two cases. Considering all horses carried by the ranch, each horse would work only twenty-two days during the year. Each horse that is actually used sometime

during the year works approximately forty full days and is carried the rest of the year. Many teams are changed at noon and replacements are provided, all of which tends to decrease the days worked per horse. The very nature of the ranch operation makes it necessary to have available a considerable number of horses to take care of seasonal operations, such as haying and rodeo work. When these seasonal uses are past there is demand for only a few head of horses, the others remaining idle the rest of the year; this naturally increases horse cost.

Horse costs on these ranches run from \$5.19 to \$28.64 per head, averaging \$11.60, a figure which warrants real consideration when planning the actual number of horses required to operate the ranch and fulfill replacement requirements.

The income from horses is exceedingly small. In recent years the only dependable outlet has been the sale of chicken feed horses at from \$2.50 to \$7 per head. Under present conditions it does not pay to carry more horses than are actually needed to operate the ranch. Additional horses take the place and consume the feed that would carry a

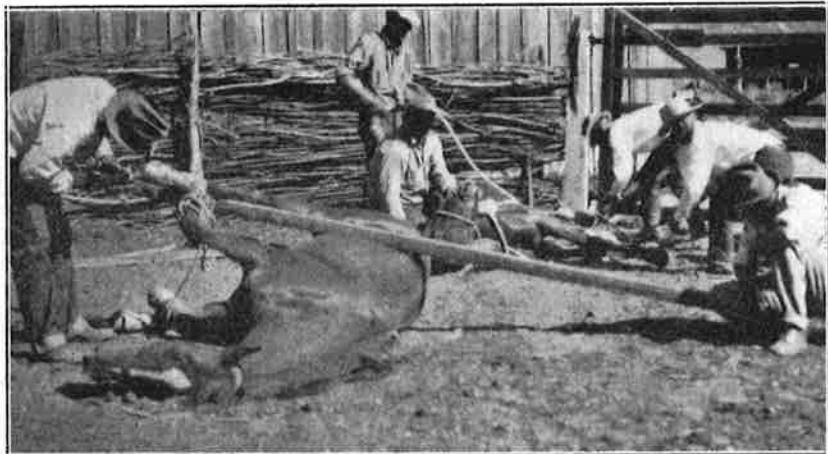


Fig. 7. Shoeing Colts for the Round-up.

few more good cattle. It is significant to note that one outfit runs 1,400 head of cattle, and produces an average of 1,200 tons of hay, with approximately the same number of horses as does another ranch running 300 head of cattle and producing 250 tons of hay. The income from sales of horses in both instances was negligible.

#### MAJOR ACCOUNTS

The following major accounts are given on a cow unit basis and go to make up the final carrying cost of cattle:

##### Handling Cattle Account.

This account consists of the costs of riding, branding, vaccinating, and dehorning.

<i>Variable Factors</i>	PHYSICAL DATA	<i>Unit Costs</i>	
Labor days per cow unit.....	.36	Labor cost per day.....	\$2.21
Board days per cow unit.....	.36	Board cost per day.....	1.33
Auto gallons per cow unit.....	.114	Auto cost per gallon.....	1.07
Horse days per cow unit.....	.37	Horse cost per day.....	.43

AVERAGE COSTS PER COW UNIT	
Overhead.....	\$0.61
Labor—days x cost per day.....	.80
Management salary.....	.27
Labor insurance.....	.02
Board—days x cost per day.....	.48
Parts and supplies.....	.09
Auto—gallons x cost per gallon.....	.12
Horses—days x cost per day.....	.16
<b>Total cost per cow unit.....</b>	<b>\$2.55</b>

Chart Number 6

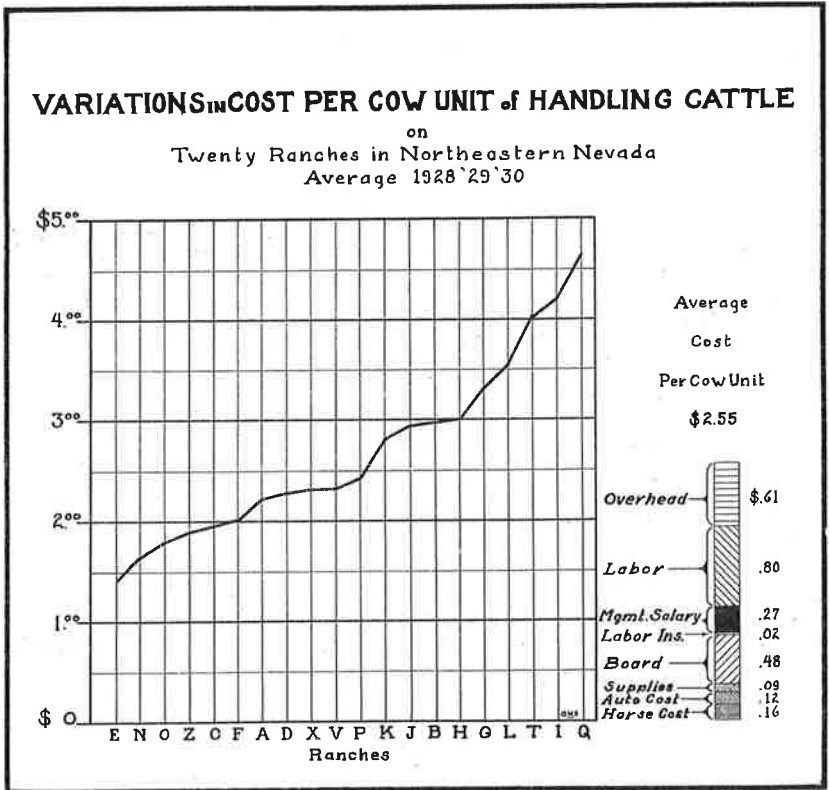
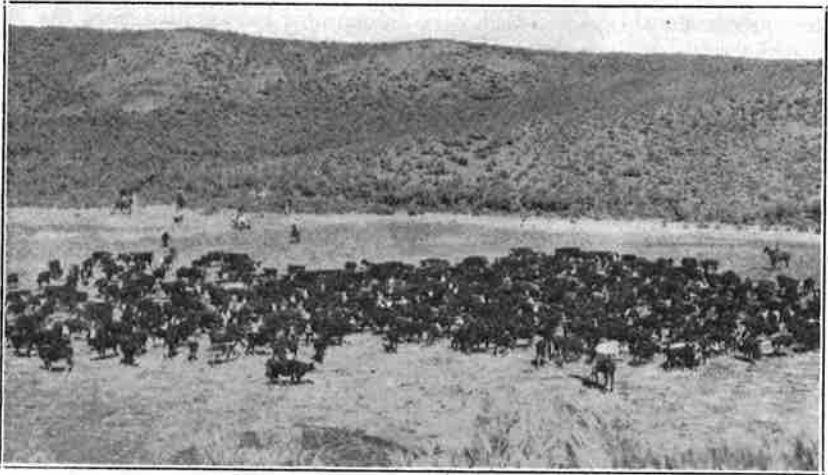


TABLE NO. 6  
Variations in Handling Cattle Costs

Ranch	Cost per cow unit	Ranch	Cost per cow unit
E .....	\$1.40	P .....	\$2.41
N .....	1.66	K .....	2.83
O .....	1.80	J .....	2.95
Z .....	1.89	B .....	2.98
C .....	1.97	H .....	3.00
F .....	2.01	G .....	3.31
A .....	2.13	L .....	3.56
D .....	2.18	T .....	4.03
X .....	2.32	I .....	4.21
V .....	2.32	Q .....	4.63

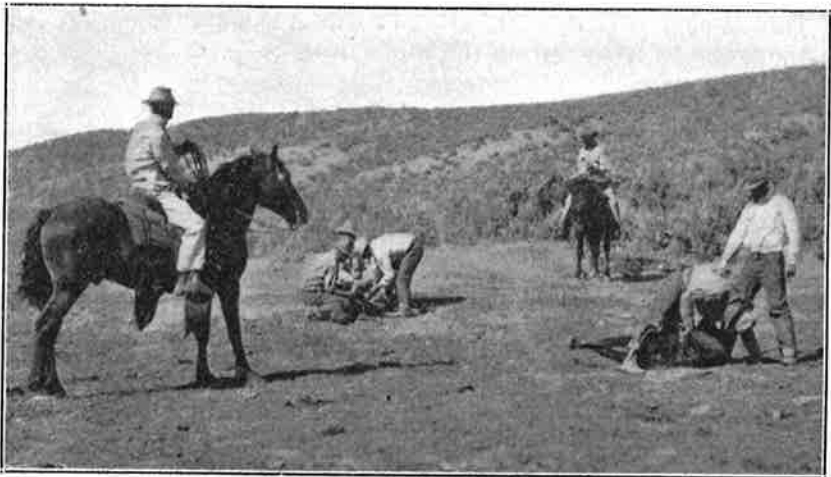
Handling cattle cost varies from \$1.40 to \$4.63, with an average of \$2.55 per cow unit. Man days and horse days spent handling cattle range from one-sixth to one day, averaging approximately one-third of a day per cow unit.

In a large measure differences are due to the set-up of various



**Fig. 8. A Round-up on the Range.**

ranches. Location and distance from ranch to range also have a considerable bearing on this cost. Poor ranges necessitate more han-



**Fig. 9. Branding Calves.**

dling to effect equal distribution among classes of cattle that can best withstand the feed shortage encountered. Water troughs on the range facilitate better distribution of cattle. Small springs can be developed to provide more water than they will produce in their natural state.

More work of this kind should be done, especially on open grazing land. Quantity of water and distance between watering places have a direct bearing on beneficial use of feed and range conservation.

Long drives are hard on all classes of cattle, particularly on fat beef cattle going to market. From fifteen to twenty miles a day is sufficient for stock cattle, depending on the class and the total length of drive. Beef cattle should be handled with the utmost care and driven not to exceed twelve miles a day to insure delivery in good condition. Handling cattle is an art and becomes second nature to some men. A few disregard the natural habits and tendencies of the cow brute, suffering the consequences of poor condition, loss in weight, and lower price.

Elaborate corral equipment is not necessary, since cattle are only handled in the corrals for dehorning, weaning, and occasionally for branding. However, a few strongly built corrals conveniently arranged are a great asset to the ranch. Type of construction is usually governed by supply and cost of available material. Simplicity, strength, and arrangement should be given first consideration in planning construction.

Cattle costs on some ranches are increased purposely to effect better methods of handling while under fence during the fall and winter months. The cattle are classed up for pasture and winter feeding. Cows and calves, yearling steers, yearling heifers, calvy cows, weaners, and dry stuff are put in separate fields or feed lots. They are watched carefully, enough bulls are placed with the cows, and all weak stuff put by themselves and provided shelter and extra feed. Some increase in handling costs for these purposes appears entirely warranted and in the long run cuts down death loss and produces a higher return.

#### Feeding Cattle.

This account consists of the cost of hauling and scattering hay and concentrates to cattle during the winter months.

<i>Variable Factors</i>	PHYSICAL DATA		<i>Unit Costs</i>
Labor days per cow unit.....	.35	Labor cost per day.....	\$1.794
Board days per cow unit.....	.35	Board cost per day.....	1.33
Auto gallons per cow unit.....	.108	Auto cost per gallon.....	1.07
Horse days per cow unit.....	.494	Horse cost per day.....	.43
AVERAGE COSTS PER COW UNIT			
Overhead.....			\$.018
Labor—days x cost per day.....			.62
Management salary.....			.26
Labor insurance.....			.02
Board—days x cost per day.....			.47
Parts and supplies.....			.09
Auto—gallons x cost per gallon.....			.12
Horses—days x cost per day.....			.21
Total cost per cow unit.....			\$1.97

The cost of feeding cattle per cow unit varies from \$1.14 to \$3.74, averaging \$1.97. Feeding cattle required from one-fifth to three-fifths labor days. The average is slightly over one-third of a labor day per cow unit. Labor days feeding were approximately double on ranches where less than 400 head of cattle were wintered, as compared with the larger herds where feeding operations were more concentrated.

Feeding days per cow unit were above the average on small ranches, and on large outfits with scattered properties. The number of horse days per cow unit feeding cattle presented a similar condition.

Chart Number 7

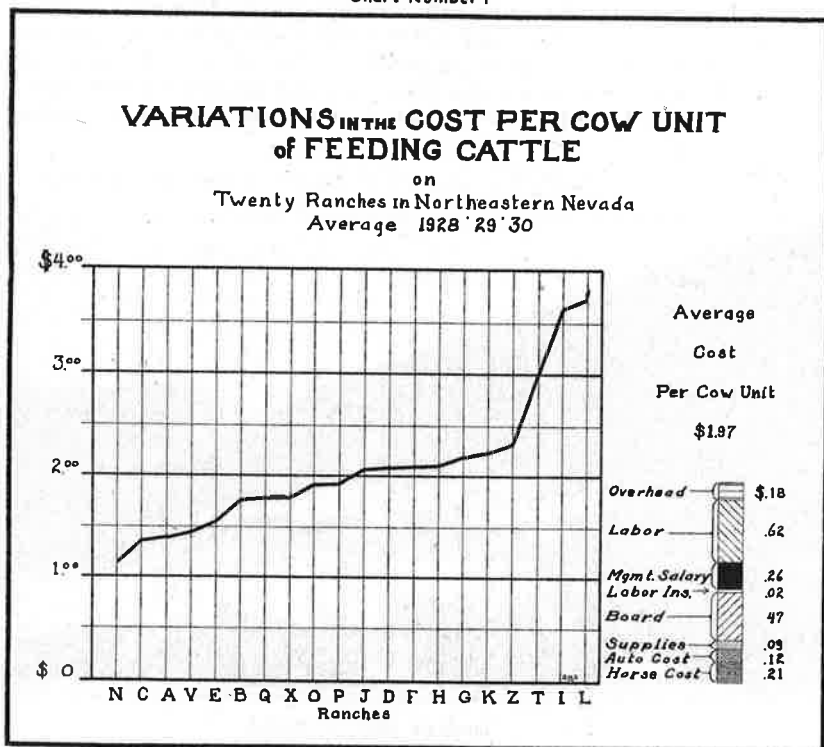


TABLE NO. 7  
Variations in the Cost of Feeding Cattle

Ranch	Cost per cow unit	Ranch	Cost per cow unit
N	\$1.14	J	\$2.06
C	1.35	D	2.07
A	1.39	F	2.08
V	1.44	H	2.11
E	1.53	G	2.20
B	1.76	K	2.23
Q	1.79	Z	2.32
X	1.79	T	3.00
O	1.91	I	3.64
P	1.93	L	3.74

The relation of feed grounds to hay supply and the number of cattle fed per man are factors exerting the greatest influence on feeding costs. Under average conditions, with stack yards and feed grounds conveniently located, one man can feed and take care of around four hundred stock cattle during the hardest winter months, when hay comprises practically the entire ration. The figure varies in different localities due to the amount of pasture browse available. In light snow districts

under good conditions one feeder can care for a larger number. On the other hand, if the feed grounds are widely scattered and each man is not given enough cattle for a full day's work the cost goes up.

Ordinarily the larger cattle outfits which are able to place sizeable bunches of the several classes of cattle in separate feed lots reduce their feeding cost. Location, hay and water supply available, and class and number to be fed often make it impossible to provide each feeder a full day's work. Feed grounds conveniently located and providing plenty of good water and natural shelter are a great asset to a cattle ranch.

#### Feeds for Cattle.

This account consists of the amounts and costs of hay, grain, concen-



Fig. 10. Hauling Hay to Cattle.

trates, and salt consumed by cattle, together with pasture and grazing cost.

<i>Variable Factors</i>	<i>PHYSICAL DATA</i>	<i>Unit Costs</i>	
Hay fed per cow unit.....	.94 tons	Hay cost per ton.....	\$6.075
Grain fed per cow unit.....	3.70 lbs.	Grain cost per lb.....	.015
Cottoncake and other concentrates fed per cow unit.....	44.72 lbs.	Cottoncake and other concentrate cost per lb.....	.023
Salt fed per cow unit.....	7.08 lbs.	Salt cost per lb.....	.01

#### AVERAGE COSTS PER COW UNIT OF FEEDS FOR CATTLE

Hay—tons fed x cost per ton.....	\$5.71
Grain—lbs. fed x cost per lb.....	.06
Concentrates—lbs. fed x cost per lb.....	1.03
Salt—lbs. fed x cost per lb.....	.07
Cost of hand feeds consumed by cattle.....	\$7.87
Pasture and grazing.....	\$1.42
Forest fees (allocated to all cattle).....	.16
Total pasture and grazing cost.....	1.58
Total cost of feeds for cattle.....	\$8.45

On an average each mature cow consumed \$8.45 worth of feed during the course of a year. Pasture costs are pretty well fixed, one year with another. Ranchers who own large tracts of pasture and grazing lands have high pasture costs. Those with sizeable areas leased likewise run high. Outfits owning a minimum amount of land with available public range have comparatively low grazing costs. Most of the concentrates fed cattle are purchased. In drouthy years large quantities are fed, the cost depending upon market price. The hay fed is largely ranch produced and comprises the bulk of the ration. Accordingly, the production cost of hay and the amount fed are two important items that must be given special consideration, if feed costs are to be held to a minimum consistent with economic cattle production.

Chart Number 8

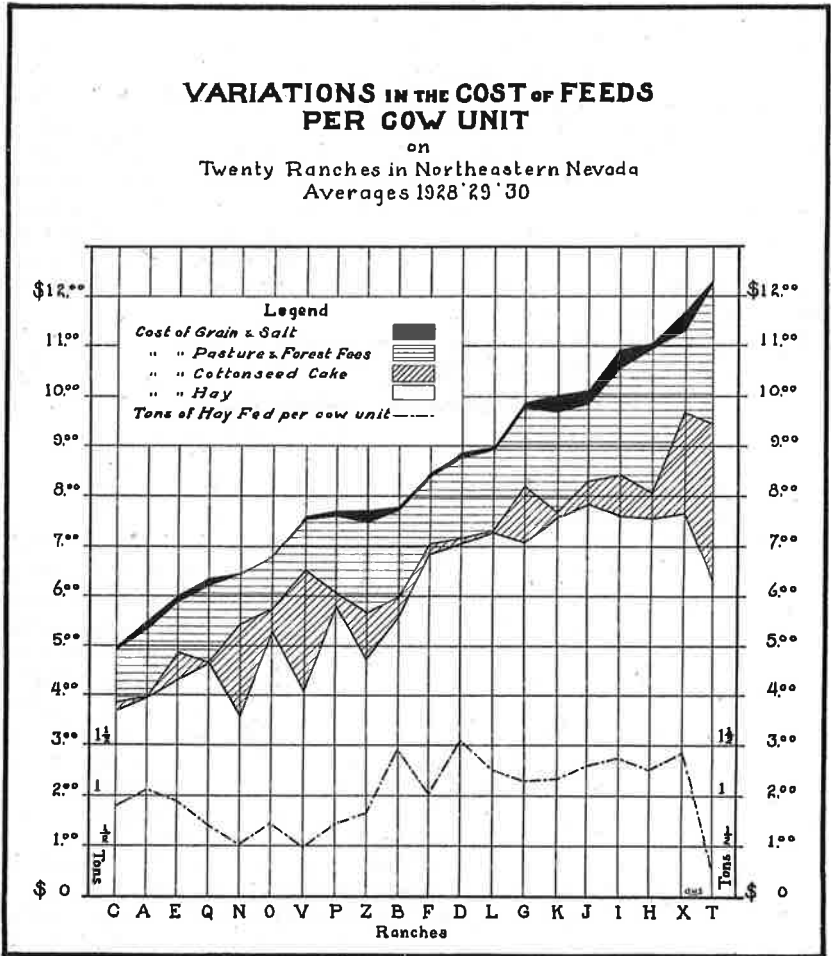


TABLE NO. 8  
Variations Per Cow Unit in the Cost of Feeds for Cattle

Ranch	Pasture and				Total	Pasture and				Total
	Hay	Cake	F. fees	Salt and grain		Hay	Cake	F. fees	Salt and grain	
C	\$3.69	\$0.15	\$1.07	\$0.06	\$4.97	F .....\$6.83	\$0.20	\$1.37	\$0.06	\$8.46
A	3.93		1.38	.16	5.47	D ..... 7.05	.10	1.59	.15	8.89
E	4.34	.51	1.05	.10	6.00	L ..... 7.29	.08	1.58	.08	8.97
Q	4.65		1.52	.16	6.33	G ..... 7.07	1.11	1.56	.11	9.85
N	3.54	1.88	1.01		6.43	K ..... 7.59	.09	2.02	.31	10.01
O	5.25	.46	1.08		6.79	J ..... 7.84	.45	1.57	.24	10.10
V	4.08	2.41	1.07	.03	7.59	I ..... 7.61	.80	2.13	.36	10.90
P	5.80	.25	1.55	.09	7.68	H ..... 7.57	.48	2.91	.08	11.04
Z	4.72	.92	1.83	.21	7.68	X ..... 7.65	1.99	1.63	.36	11.64
B	5.57	.42	1.73	.06	7.78	T ..... 6.36	3.11	2.79	.05	12.31

The costs at which hay and grain consumed by cattle are charged into this account vary somewhat from production cost because a percentage of such feeds was purchased at prices below or above production costs.

In Chart No. 8 the total feed cost per cow unit varies from \$4.97 to \$12.31, averaging \$8.45. Since pasture costs are figured on the same basis for all ranches and the price paid for grain, salt, forest fees and cottonseed cake is approximately the same, the differences in these costs per cow unit are due to the amounts fed and not to variations in price. However, the cost of hay per cow unit depends upon differences in hay production costs as well as in amounts fed; therefore the tons of hay fed per cow unit have also been charted in order to give a more complete picture of the conditions. For instance, ranch V feeds half as much hay as A, yet the cost per cow unit is the same. Ranch T feeds only one-fourth of a ton per cow unit, yet the hay cost is high, due to a high hay production cost.

Because of the great difference in the amount of feeds per cow unit, the following table has been included.

Variations in Amounts of Feed for Cattle

	MAJORITY OF RANCHES			
	Low	From	To	High
Hay fed per cow unit, tons.....	.29	.72	1.30	1.56
Grain fed per cow unit, lbs.....	...	...	8.69	15.99
Cake fed per cow unit, lbs.....	...	3.25	63.74	134.12
Salt fed per cow unit, lbs.....	.08	3.76	9.97	14.30

Feed consumed by cattle represents the largest single item which enters into carrying cost per cow unit. The amount fed depends upon the locality, length of grazing season, and weather conditions. A good many outfits bordering the desert feed from one-third to three-fourths of a ton of hay per cow unit. They are favorably located in this respect, being able to graze on the desert during the winter months, and on the higher elevations in the summer. Ranches in the higher elevations feed from three-fourths to one and one-half tons per cow unit, depending upon location and length of winter feeding season. Hay is supplemented with grain and cottoncake on many ranches, especially in short crop years. As a rule cattle are classified and concentrates are fed to weaners, calvy heifers or thin stuff.

To set a definite amount of feed necessary to carry a cow unit is not practical due to the many changing conditions. However, as a measure of safety ranchers on the higher elevations find it advisable to make provision for at least one ton of hay per cow unit, or its equivalent in hay and concentrates. Those in milder sections of the country are generally quite safe if they provide some concentrates and half a ton of hay per cow unit.

The amount of salt required is largely a matter of opinion among ranchers. In some sections of the country, particularly in desert or lake-bottom regions, even though cattle are given free access to salt at all times very little salt is consumed. Outfits on the higher elevations with pastures and hay fields well irrigated and well drained find that cattle have a craving for salt and consume it readily in much larger amounts than cattle on low lands.

Pasture and grazing costs are largely dependent upon availability of public range and the carrying capacity of the ranch proper. Grazing and hand feeding are so interrelated that it is difficult to draw conclusions separately. Ranches with low grazing and pasture capacities are compelled to do more hand feeding.

The location, the productivity of ranch and range, and the amount of owned land determine in a large measure the differences between feed costs per unit. As a general rule ranches with low year-round feed costs have comparatively low cattle production costs. Feed outlay is a heavy expense especially if much hand feeding is done. Many ranchers go on the principle that hay in the stack is the same as money

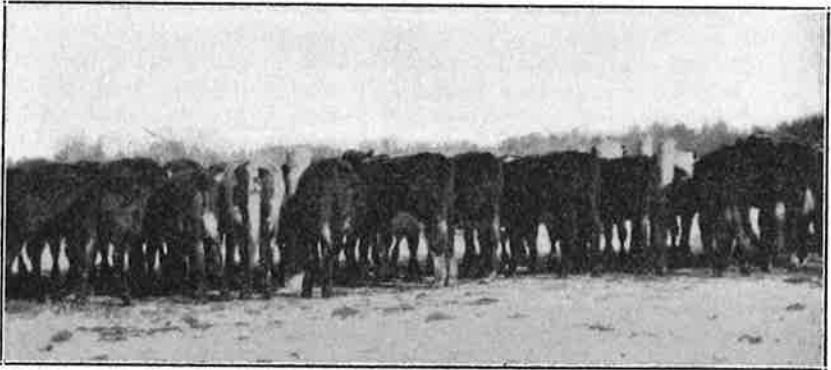


Fig. 11. Growing Out Weaner Steers.

in the bank. They guard it, feed cautiously, and take advantage of every opportunity to save hay. Their cattle go to the range in fair condition. In the long run those who practice this principle are best prepared for a long heavy winter, and apparently come out best in the end. Other outfits feed heavily and even buy hay to do it. Their cattle are in extra good condition when turned to the range. They usually carry more finish when marketed, but it is doubtful if the extra weight and slight price spread pay for the additional cost. In short crop years such an outfit cuts heavily into its herd at market time in order to balance up cattle with available hay supply. Prices under those conditions are low and receipts discouraging. The rancher with hay in reserve sells lightly under these conditions. When good years come and demand is keen he cuts and trims his herd, holding only his constant number of good age breeding cows and yearling and weaner steers.

The most general practice consists of feeding stock cattle heaviest the fore part of the winter. Cattle have a keen appetite for hay then, consume more, become strong and are prepared for severe weather.

During that period they are usually fed all they will clean up without waste. Later in the season the ration can be cut down considerably, depending on weather conditions. Some successful stockmen feed heavily for a month or so during heavy weather and then cut to a maintenance ration of hay and cured grass with good results.

Cows, calves, and young stock should be given the best hay on the ranch. If possible, alfalfa or clover hay should be worked into their ration. When these crops are not available on the ranch some operators supplement their grass hay with a one or two pound ration of protein concentrates for calves and weak stock.

Feeding a light ration of concentrates to young animals is quite general and worthy of consideration. It helps grow them out, slicks them up and they mature at an earlier age. Wintering cattle on concentrates along with ample rough forage is practiced on some ranches. This runs into money and should be well planned before being attempted by the average rancher.

#### General Ranch.

The general ranch account consists of all costs involved in producing small livestock (sheep, hogs, poultry, etc.), grain, and home grown food supplies.

Credits and charges for the enterprises involved are made covering sales at sale price, inventory changes, livestock feeds and produce consumed at production cost (Appendix 1-8). Grain fed cattle, food produce consumed in board, etc., are sold to those accounts at production cost and, since their production cost is already in the general ranch account, their receipts are credited to this account. When all pertinent charges and credits are accounted for, the remainder represents the net general ranch cost chargeable to the production of cattle.

		PHYSICAL DATA	
<i>Variable Factors</i>			<i>Unit Costs</i>
Labor days per cow unit.....	.553	Labor cost per day.....	\$1.926
Board days per cow unit.....	.553	Board cost per day.....	1.33
Auto gallons per cow unit.....	.122	Auto cost per gallon.....	1.07
Horse days per cow unit.....	.36	Horse cost per day.....	.43

#### AVERAGE COST OF GENERAL RANCH PER COW UNIT

Overhead.....	\$0.30
Labor—days x cost per day.....	1.06
Management salary.....	.27
Labor insurance.....	.02
Board—days x cost per day.....	.74
Parts and supplies.....	.15
Automobile—gallons x cost per gallon.....	.13
Horses—days x cost per day.....	.16
Cost of produced food and grain on hand Jan. 1..	.47
Feed consumed by small livestock.....	.22
Gross cost per cow unit.....	\$3.52
Produced food consumed and on hand Dec. 31..	\$0.43
Produced grain fed, sold, and on hand Dec. 31....	.05
Inventory increase in small livestock.....	.15
Total credits per cow unit.....	1.23
Net cost of general ranch per cow unit.....	\$2.29

Chart Number 9

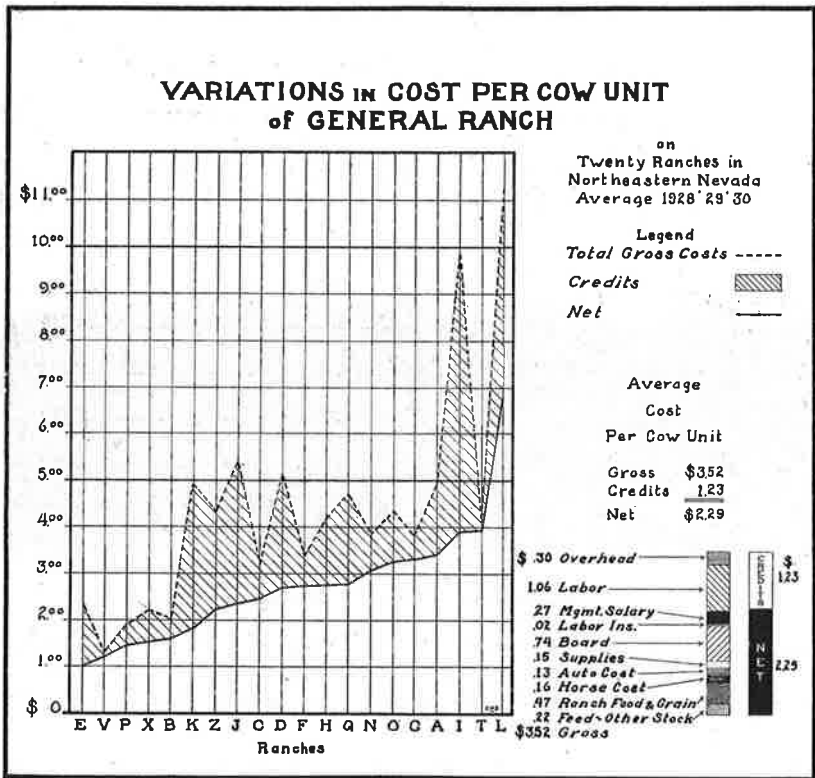


TABLE NO. 9  
Variations in General Ranch Cost Per Cow Unit

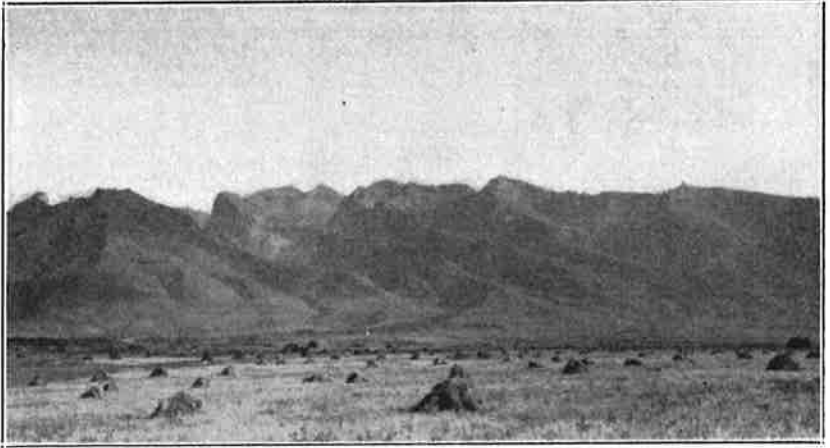
Ranch	Gross cost	Credits	Net cost	Ranch	Gross cost	Credits	Net cost
E	\$2.35	\$1.32	\$1.03	F	\$3.97	\$0.65	\$2.72
V	1.25	.03	1.22	H	4.19	1.43	2.76
P	1.89	.44	1.45	Q	4.69	1.90	2.79
X	2.21	.69	1.52	N	3.86	.77	3.09
B	2.02	.44	1.58	O	4.35	1.07	3.28
K	4.98	3.13	1.80	G	3.80	.48	3.32
Z	4.35	2.12	2.23	A	4.93	1.51	3.42
J	5.38	3.02	2.36	I	9.88	5.93	3.90
C	3.20	.74	2.46	T	4.18	.21	3.97
D	5.11	2.41	2.70	L	11.27	4.53	6.74

The net general ranch cost per cow unit varies from \$1.03 to \$6.74, averaging \$2.29.

Outfits of a diversified type which produce grain, small livestock, and ranch food supplies ordinarily have a comparatively high general ranch cost, with relatively high credits. As a rule, grain production is practiced by valley ranchers with inadequate cattle range. The grain is largely fed to livestock as a means of offsetting range deficiency. Grain production causes the greatest difference in gross general ranch costs. When good grain crops are produced the diversified type of ranch is able to hold general ranch costs pretty well in line with those of the straight grass ranch. During dry years such a rancher

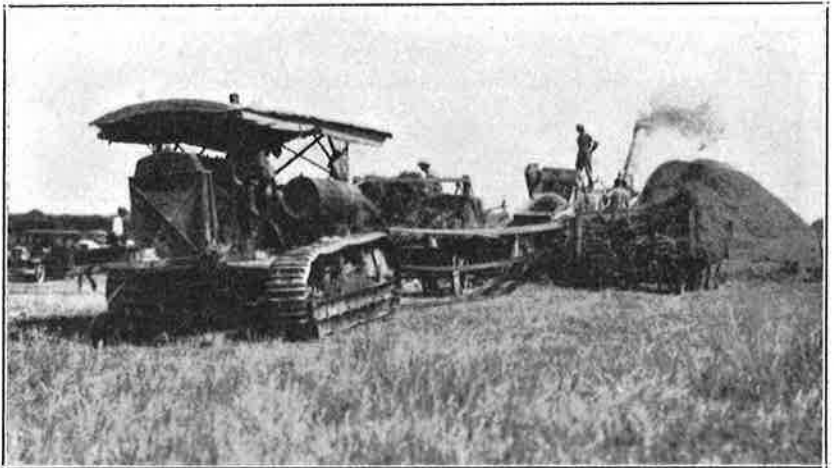
is confronted with a higher cost, for in addition to purchasing feeds, his efforts and costs in producing grain are largely lost due to crop failure.

Not many range cattle ranches capable of grain production are



**Fig. 12. Valley Ranch Suited to Grain Production.**

located in a good grass country. Grain is planted only when conditions are extremely favorable. Usually a bumper crop is harvested and stored as a reserve feed for livestock. The supply may last for two or three years before being consumed.



**Fig. 13. Threshing Outfit in Operation.**

The production of hogs, sheep, and poultry is undertaken mostly by the small operators. They do not have enough cattle to occupy their entire attention, the revenue from them usually is insufficient to carry

the ranch, and they work in sideline enterprises the better to balance their operation. On the smaller ranches this is entirely justified.

### CATTLE CARRYING COST

This account is a recapitulation of all pertinent costs in connection with the operation of the ranch. The accounts which make up carrying cost have been presented and explained separately. The purchased breeding stock cost listed below represents the difference between purchase price and production cost of breeding cows and heifers, which is spread over their probable useful life. Credits listed below are general ranch credits, previously explained, and ranch produced bull calves sold to the bull account. Such bulls are credited to carrying cost since their cost is charged to the bull account. Net carrying cost per cow unit is the cost of supporting a cow unit on the ranch a full year.

#### Average Carrying Cost Per Cow Unit

	Charges	Overhead	Labor	Management salary	Labor insurance	Board	Supplies	Feed for cattle	Automobiles	Horses	Prod. food and grain January 1	Feed for small livestock	Total
Handling cattle.....	\$0.61	\$0.80	\$0.27	\$0.02	\$0.48	\$0.09	.....	\$0.12	\$0.16	.....	.....	.....	\$2.55
Feeding cattle.....	.18	.62	.26	.02	.47	.09	.....	.12	.21	.....	.....	.....	1.97
Feeds for cattle.....	.....	.....	.....	.....	.....	.....	\$8.45	.....	.....	.....	.....	.....	8.45
General ranch.....	.30	1.06	.27	.02	.74	.15	.....	.13	.16	\$0.47	\$0.22	.....	3.52
Purchased stock.....	.01	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.01
Total charges.....	\$1.10	\$2.48	\$0.80	\$0.06	\$1.69	\$0.33	\$8.45	\$0.37	\$0.53	\$0.47	\$0.22	.....	\$16.50
<i>Credits—</i>													
General ranch credits.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	\$1.23	.....
Produced bulls to bull account.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.39	.....
Total credits.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.62
Net carrying cost.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	\$14.88

In reading these figures it must be remembered that these direct charges are not necessarily the total cost of the minor accounts. For example, the average auto cost per cow unit was given as \$1.04 under the automobile account. Only \$0.37 is shown here. The reason for this is that the automobile has also been charged into board, horses, cost of feed, etc., and makes up part of each of these accounts. Out of the \$1.04, cost of the automobile per cow unit, \$0.37 is shown as a direct charge, \$0.16 was charged to pleasure, and approximately \$0.16 was included in hay, under feed, leaving \$0.35 scattered among the other minor accounts. This same principle applies to other figures given above.

Cattle carrying cost varies from \$9.97 to \$23.02 with an average of \$14.88 per cow unit. Variations between carrying costs are due to the general set-up of the ranch which involves location, productivity, size, and balance, together with management practices and efficiency.

Carrying cost variations are charted herein, showing the cost range and the several accounts which make up this total cost. The same chart also shows the average of each account that goes to make up the carrying cost per head. These accounts are General Ranch, Feeds for Cattle, Feeding Cattle and Handling Cattle and they warrant strict attention

and careful supervision. The cost of feed consumed by cattle is the one big item to be watched. It is dependent upon the amount of hand feeds, pasture and grazing forage consumed by cattle and their costs, whether purchased or produced. It is practically impossible to offset excessive feed costs, even though rigid economy and efficient management are practiced in other ranch accounts.

A comparatively low carrying cost is a decided aid to success in the cattle business. To effect a low carrying cost necessitates close supervision of all contributing ranch accounts. A proposed change in practice which means additional cost should always be thoroughly investigated. Such a change should give real promise of added revenue over and above cost before being attempted. Depending upon the circumstances surrounding the set-up of every ranch there is a definite way of operation which will bring maximum returns. The problem resolves itself into management efficiency of individual ranches.

Chart Number 10

### VARIATIONS IN THE ANNUAL CARRYING COST PER COW UNIT

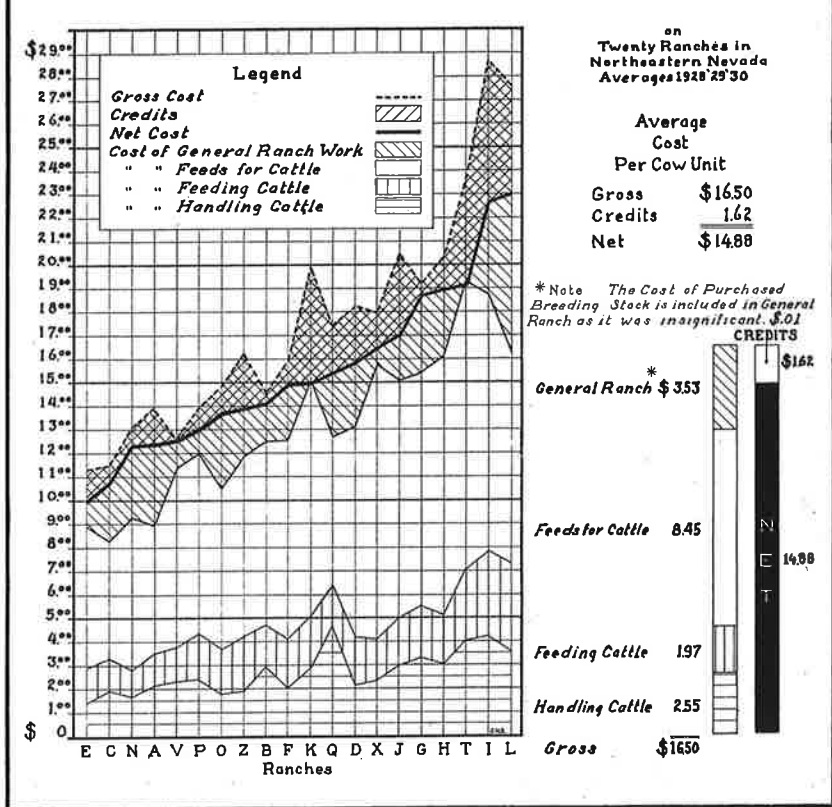


TABLE NO. 10  
Variations in Carrying Costs Per Cow Unit

Ranch	Handling cattle	Feeding cattle	Feeds for cattle	General ranch	Gross cost	Total credits	Net cost
E	\$1.40	\$1.53	\$6.00	\$2.35	\$11.28	\$1.31	\$9.97
C	1.97	1.35	4.97	3.20	11.49	.75	10.74
N	1.66	1.14	6.43	3.86	13.09	.76	12.33
A	2.14	1.39	5.47	4.93	13.93	1.51	12.42
V	2.83	1.44	7.59	1.25	12.61	.04	12.57
P	2.41	1.92	7.68	1.89	13.91	.84	13.07
O	1.80	1.91	6.79	4.35	14.85	1.07	13.78
Z	1.89	2.32	7.68	4.35	16.24	2.27	13.97
B	2.98	1.76	7.78	2.02	14.54	.44	14.10
F	2.01	2.08	8.46	3.37	15.92	1.01	14.91
K	2.84	2.23	10.01	4.93	20.01	4.99	15.02
Q	4.63	1.79	6.33	4.69	17.44	2.04	15.40
D	2.13	2.07	8.89	5.11	18.25	2.41	15.84
X	2.32	1.79	11.64	2.21	17.96	1.44	16.52
J	2.96	2.06	10.10	5.38	20.50	3.49	17.01
G	3.31	2.20	9.86	3.80	19.17	.48	18.69
H	3.00	2.12	11.04	4.19	20.35	1.43	18.92
T	4.03	3.00	12.30	4.18	23.51	4.36	19.15
I	4.21	3.63	10.91	9.88	28.63	5.98	22.65
L	3.57	3.74	8.97	11.27	27.55	4.53	23.02
Average	\$2.55	\$1.97	\$8.45	\$3.52	\$16.50	\$1.62	\$14.88

### BULL COSTS

A bull represents one and one-half cow units. Bull carrying cost is computed on that basis. Bull calves are appreciated in value until two years old on the basis of carrying cost and the period of time required to grow them out. Mature bulls are depreciated on the basis of cost, years of use, and salvage value, taking death loss and sales into account. For the 1928-1930 period salvage value of slaughter bulls was calculated at \$80 and of serviceable bulls \$110. The investment in bulls is computed from the bull inventory, which takes into account cost, appreciation, and depreciation, and presents the average value for all ages.

#### Average Bull Costs

Carrying cost per head (cost per cow unit x $1\frac{1}{2}$ )	\$22.32
Depreciation and death loss per head	11.53
	\$33.85
Bull maintenance cost per head	\$33.85
Bull cost per breeding cow	\$1.79
Bull cost per calf branded	2.80
Average investment per head (all ages)	122.76

The majority of ranches run from 21 to 37 breeding cows per bull of serviceable age, with an average of 24. Twenty-two per cent of the bulls carried on the ranches are young bulls being grown out for later service. Ranchers who supply one good serviceable bull to approximately 25 breeding cows get the best calf crops. Some outfits have more bulls than necessary, counting old bulls unfit for efficient service; others have far too few of serviceable age and condition for best results. Approximately 10% of the bulls of serviceable age were seven years old or over. Bull maintenance cost per head on most ranches runs from \$24 to \$38, with an average of \$33.85. This cost is dependent upon original cost, carrying cost, depreciation and death loss.

On most ranches bull cost per breeding cow runs from \$1 to \$2.50, the average being \$1.79. Bull cost per calf branded ranges from \$1.50 to \$3.24 on the majority of ranches, the average being \$2.80. It is practically impossible to establish definite causes for variations in bull cost per cow and bull cost per calf as between different ranches, since the cattle range in common and stockmen who do not provide enough bulls get the benefit of bulls supplied by others.

Bull cost is an expensive item on a cattle ranch. The bull herd requires constant attention to keep it in maximum working order. For best results bull replacements should be made frequently. Frequent bull replacements accomplish the following purposes which affect maximum service.

1. The bulls are easier to handle and become accustomed to the range quickly.
  2. There is a better distribution of young and old bulls for range and pasture breeding.
  3. The percentage of death loss is reduced.
  4. A smaller outlay of money at one time is required.
- A sufficient number of good bulls of the right type for range use are

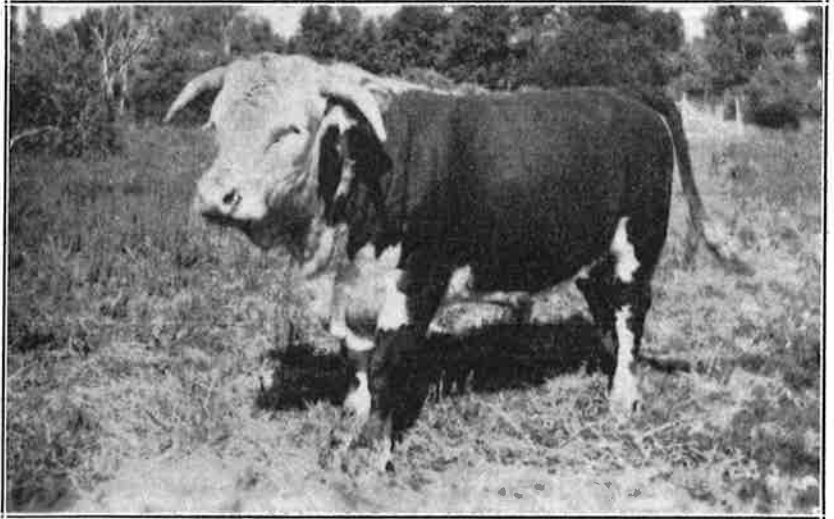


Fig. 14. A Good Range Bull.

essential for the efficient production of cattle. A good point to remember is that the bulls are half the herd.

#### **DEATH LOSS**

Death loss is the percentage of cattle dead or missing during the year, computed by dividing the number missing by the number of cattle on the ranch a full year (occupancy head). For the period under study death loss among all cattle on the twenty ranches averaged 3.10 per cent. Among cattle other than bulls the average was 3.04 per cent. Loss among bulls ranged from no death loss to 13.6 per cent, the average being 5.23 per cent. The big death losses occurred among old bulls and young bulls not thoroughly acclimated. The death loss among seasoned bulls from three to six years old is apparently less than that among other stock cattle.

Death loss is largely attributed to poor range, poisonous plants, disease, predatory animals, and theft. On poor ranges death loss is invariably high and it is difficult if not impossible to remedy. Cattle

occasionally are wintered well and turned out on the range in excellent condition, only to come back in the fall poorer than when they left and fewer in numbers.

Poisonous plants in some districts practically prohibit economic cattle production. On the higher elevations of the Ruby Mountains larkspur takes a heavy toll annually.

Predatory animals, with respect to cattle losses, are pretty well controlled. Proof of this is established by the fact that in districts well fortified against losses from other causes the death loss is low and can easily be attributed to natural causes.

Loss attributed to theft is a severe handicap to stockmen in certain sections of the country. One outfit, during one year, suffered a nine per cent death loss when three per cent should normally cover the



Fig. 15. Range Bulls in the Feed Lot.

conditions under which it operated. This percentage only accounted for branded stuff. The calf crop was far under average and this was laid to the theft of a good many unbranded calves. In numerous instances cows were gathered with big bags and no calf. Quite often cow hands report finding evidence that an animal had been slaughtered on the range. Occasionally they have identified the animal because the thieves have left the hide on the range with the offal. Fortunately severe outbreaks of theft are periodical. When this condition becomes critical in a district all hands are on the lookout and the thieves leave or quiet down for a while.

Death loss fluctuates somewhat due to the method of running and sale of the cattle. Some ranchers hold their old cows in the field in the spring, nurse them along on good feed through the summer, and dispose of them all regardless of condition before winter sets in again. This practice cuts down death loss, though its advisability is dependent upon available ranch pasture, and the difficulty in gathering off the range.

Trying to get the last year of service out of an old bull on the range is false economy. The death loss among old bulls seven years and over ran as high as 27.5 per cent on two different ranches. The average

death loss among all bulls seven years and over is 16.5 per cent. Old bulls must be disposed of from time to time. It is better to sell them than lose them on the range. A good time to sell bulls carrying age is when prices are high even though they have another year or so of service in them.

The average cowman readily understands these situations and appreciates that there is considerable expense encountered in taking the



Fig. 16. A Steer Killed by Larkspur.

chances set forth above, but few if any actually realize the price they have paid. Instances of this nature are not common, yet they are on the whole so frequent that almost every stockman of consequence has had at least one costly experience with imported bulls or old timers.

#### CALF CROP

Calf crop percentage is found by dividing the number of calves branded during the year by the number of breeding cows on the ranch a full year.

	Low	—MAJORITY OF RANCHES—		High	Average
		From	To		
Calf crop per cent.....	50.53	56.92	72.43	84.14	63.92

There are many causes for the differences between good and poor calf crops, and in many cases it is very difficult if not impossible to overcome them. Important factors that cause low calf crop are:

1. Inadequate supply of serviceable bulls.
2. Bulls not acclimated, in poor condition, unevenly distributed, and often too old.
3. No provision made to supply fresh bulls for service when cattle are gathered.

4. Cows not in thrifty breeding condition due to poor range, insufficient balanced winter rations, or a combination of both.

5. Heifers bred too soon, causing them in many cases to skip a year before calving again.

6. Big calves allowed to suck the cows, often causing the cow to lose her next calf, or run down in flesh and pass a year.

7. Abortions and genital diseases.

8. Losses due to lack of care and shelter, especially true among newborn calves in the winter months.

9. Keeping breeding stock, calves, and mixed classes of cattle in the same pasture.

On some ranches there is considerable loss of calves during the winter months. Strictly wild hay ranches, with little shelter, experience the most trouble along this line. The problem is not easily solved. Calves dropped after November suffer loss due to rigorous weather on large unprotected areas. The straight wild hay crop matures early and it is difficult to prevent its going into the stack extremely dry. Such feed is not conducive to milk flow, and the fall and winter calves often have



Fig. 17. Old Cows Held on Pasture.

a hard time existing. It is surprising to note the cold weather a calf will stand if its mother has a good milk flow. Controlled breeding would possibly correct the trouble but on this type of ranch the cows are often on the range nine months out of the year and the practice would have to be initiated by all cattlemen in the section, which constitutes something of a problem.

Providing supplemental feeds and shelter work out very well in some instances. Ranchers who have roomy sheds, barns, or plenty of brush shelter and considerable alfalfa hay have calves born the year round with excellent results. The wild hay ranch, lacking such facilities, necessarily works to cope with the problem by erecting sheds and providing purchased concentrates such as oil cake to make better provision for winter calves. Cows ranging out nine months of the year are wild and hard to handle in and out of barns or sheds. It undoubtedly takes several years of this sort of handling to get the practice to a point where it more than pays for the added cost. In years when the rancher is compelled to purchase extra feeds the transaction can be counted on to cut deeply into his revenue.

On ranches without brush or natural shelter, where considerable

tame hay is grown, some operators have large cow barns for handling calfy cows. Not infrequently this type of ranch runs the cattle on the open range except in severe weather. During cold stormy spells the calfy cows and weak stuff are brought to the ranch for feed and shelter. This practice increases calf crop percentage and lowers death loss.

Calf crop is a vital factor in the cattle business. Too often cattlemen go on producing without paying any great amount of attention to this important item and within a few years, unless they have a very low running cost, financial embarrassment and failure are certain to follow.

#### THE PRODUCTION COST OF CATTLE

Cattle production costs are dependent on four main factors:

Carrying Cost Per Cow Unit.

Bull Cost Per Breeding Cow.

The Percentage of Death Loss.

The Percentage of Calf Crop.

Cow maintenance cost is the total of carrying cost, bull cost, and death loss per breeding cow. Calf cost is computed by dividing cow maintenance cost by calf crop percentage, since the calves produced carry the cost of all breeding cows. Seasonal breeding is not practiced. Calves are dropped the year round. Accordingly at the end of the year calves produced during the year average six months of age.

#### Average Costs

##### Cow Maintenance Cost:

Carrying cost per cow.....	\$14.88
Bull cost per cow.....	1.79
Death loss per cow (3 04% x \$50).....	1.52
Total cow maintenance cost.....	<u>\$18.19</u>

Maintenance cost \$18.19 divided by calf crop 63.92% equals the cost of a calf at six months, \$28.46.

The production cost of older animals consists of calf cost plus carrying cost and death loss.

The majority of ranches produce six months calves at from \$24 to \$33, the average being \$28.46.

Two-year-olds are produced by the majority of ranches within a cost range of \$42 to \$60, the average being \$49.10.

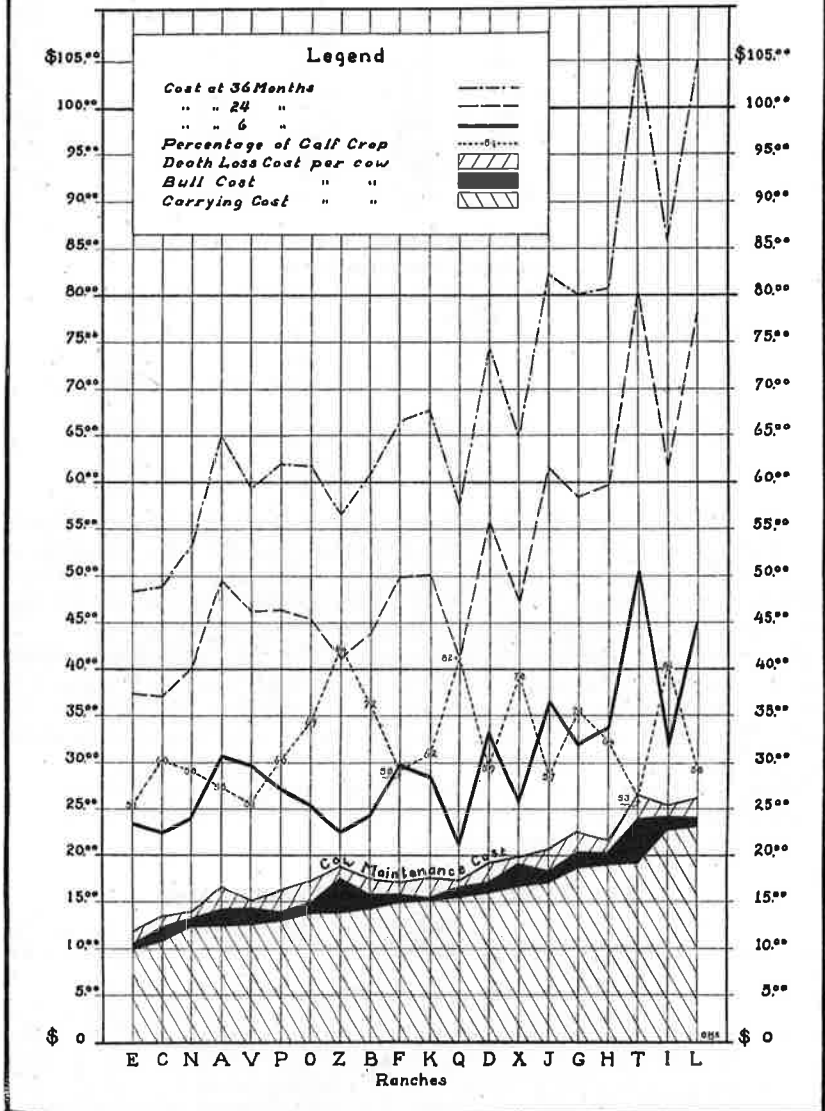
The initial calf cost is a very important item in cattle production. By noting the difference in calf crop percentages with practically the same cow maintenance cost, one may readily see the marked influence this factor has on the production cost of a calf. For instance, ranches K and Q have practically the same cow maintenance cost. However, a 20 per cent difference in calf crop gives a difference of over \$7 in the cost of a calf.

Providing death loss and bull costs are normal, low calf costs are the result of low carrying cost coupled with a medium to high calf crop, or a fairly high carrying cost coupled with a high calf crop. The ideal for each ranch is to hold carrying cost, death loss and bull cost as low as possible and still get a good calf crop.

Chart Number 11

## VARIATIONS IN THE PRODUCTION COST OF CATTLE 6-24 & 36 MONTHS

on  
Twenty Ranches in Northeastern Nevada  
Averages 1928 '29 '30



**TABLE NO. 11**  
Variations in Production Costs

Ranch	Carrying cost	Bull cost	Death loss cost	Cow maintenance cost	Calf crop per cent	Cost at 6 mo.	Cost at 24 mo.	Cost at 36 mo.
E .....	\$9.97	\$0.60	\$1.29	\$11.86	50.53	\$23.47	\$37.27	\$48.39
C .....	10.74	1.53	1.21	13.48	60.29	22.36	37.04	48.86
N .....	12.38	.88	.71	13.92	58.18	23.93	40.14	53.16
A .....	12.42	1.80	2.55	16.77	54.90	30.55	49.50	64.92
V .....	12.57	1.85	.70	15.12	51.06	29.61	46.22	59.37
P .....	13.07	.94	2.30	16.31	60.25	27.07	46.30	61.95
O .....	13.78	1.17	2.38	17.33	68.72	25.21	45.33	61.75
Z .....	13.97	3.73	1.17	18.87	84.14	22.43	41.22	56.40
B .....	14.10	1.63	1.78	17.61	72.43	24.18	43.92	61.00
F .....	14.91	.95	1.28	17.14	58.06	29.52	49.94	66.41
K .....	15.02	.36	2.16	17.54	61.74	28.41	50.12	67.78
Q .....	15.40	1.13	.81	17.34	82.29	21.07	41.25	57.50
D .....	15.84	1.34	2.10	19.28	58.72	32.83	56.81	74.49
X .....	16.52	2.60	.85	19.97	78.16	25.55	47.32	64.86
J .....	17.01	1.34	2.35	20.70	56.92	36.37	61.50	82.06
G .....	18.69	1.75	2.08	22.52	70.88	31.77	58.42	80.11
H .....	18.92	1.27	1.44	21.63	64.25	33.66	59.67	80.72
T .....	19.15	4.81	2.49	26.45	52.63	50.26	80.67	105.50
I .....	22.65	1.65	1.03	25.33	80.67	31.40	61.45	85.72
L .....	23.02	1.06	2.09	26.19	58.22	44.95	73.16	105.17
Average .....	\$14.88	\$1.79	\$1.52	\$18.19	63.92	\$23.46	\$49.10	\$65.82

**TABLE NO. 12**  
Average Production Costs

Age	Cost per head	Lbs. per head	Cost per lb.
6 months.....	\$28.46	370	\$0.077
12 months.....	34.64	525	.066
15 months.....	37.73	605	.0624
18 months.....	40.82	685	.0596
21 months.....	44.96	800	.0562
24 months.....	49.10	930	.0528
27 months.....	53.25	1,000	.0533
30 months.....	57.39	1,040	.0552
36 months.....	65.82	1,100	.0598

Table No. 12 presents the average production cost, average weight and average cost per pound for the different ages of cattle. The age to sell cattle is when the animal carries the most weight for the least production cost per pound. This study indicates that the production cost per pound on the average ranch is least at 24 months of age.

However, this conclusion is not applicable to individual outfits because variation in range conditions, carrying cost, calf crop and weights are reflected in cost per pound. A rancher should study his individual set-up relative to costs and weights and thereby determine the best selling age suited to his operation.

When it is realized that these costs do not include investment interest a comparison with average market prices shows the narrow margin on which such cattle producers operate.

#### GENERAL DISCUSSION AND CONCLUSIONS

Under the separate accounts, figures and factors affecting particular costs are presented. A general discussion of interrelated ranch accounts follows:

Size and organization of the cattle outfit have a great influence on costs. Almost without exception outfits running under 400 head, even if properly balanced in land and cattle, have a high carrying cost. Volume production counts in the cattle business, as in any other. The management and organization, size and location of the ranch and number of cattle should be planned to constitute a balanced operation.

Such a balanced organization can be perfected with a medium-sized or a very large herd of cattle. With the larger outfits the complete management need not be centered in one man as long as there is sufficient interest and understanding concerning the responsibility of those in charge. Economy, efficiency, and volume production can be accomplished with multiple management where one partner takes charge of the ranch, another looks after the cattle, a third the books and business transactions. The maximum limit on the number of cattle for efficient production is dependent upon management and the service capacity of the organization.

Scattered properties are a handicap and should be avoided if possible. A cattle ranch cannot endure long if loose management, haphazard methods, and indifference are allowed to creep in. Old time cattle ranches that weathered the storms of high costs and low prices during

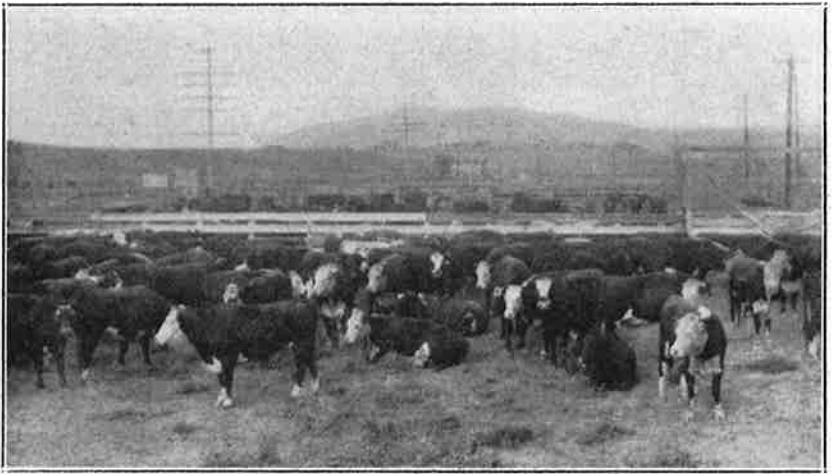


Fig. 18. Beef Steers Enroute to Market.

the period from 1921 to 1927 can be counted on to have fairly substantial organizations.

A low or high production cost is not necessarily a reflection of good or bad management. For example an exceptionally good manager operating a nicely balanced ranch organization in good range country obviously can produce cattle for much less than he could with a poor range. A poor range or one with a short season of range utilization exerts an unbalancing effect upon the efficiency of producing cattle. This condition is reflected in higher production costs. Such a range with a short grazing season necessitates providing more expensive forage, such as privately owned pastures or leased areas; or it forces the early utilization of the cut-over hay lands when they would otherwise be held in reserve for late fall and winter forage. When the grazing resources become exhausted the feeding of hand cured forage must be started. In either case the cost of maintaining and producing all classes of cattle on the ranch increases, due to added grazing costs or the long hand feeding season and the amount of expensive feed consumed.

In one locality high hay production cost may be offset by the small amount required per cow unit. In the end the carrying cost may be well in line for economical production. This principle applies to many of the accounts which contribute to production cost. Operators are prone to become most interested and efficient in the department to which the ranch best lends itself. The man on a good hay ranch is proud of it, gets a good yield and produces it very efficiently. While his attentions are centered on one department, another is apt to be neglected. A ranch manager is rarely equally efficient in all departments of the ranch. He takes the lead in the most important work at hand and sometimes during busy seasons puts off some other work, or lets it slide without supervision. Invariably the result is costly.

Calf crop, death loss, weight and condition of the cattle are directly

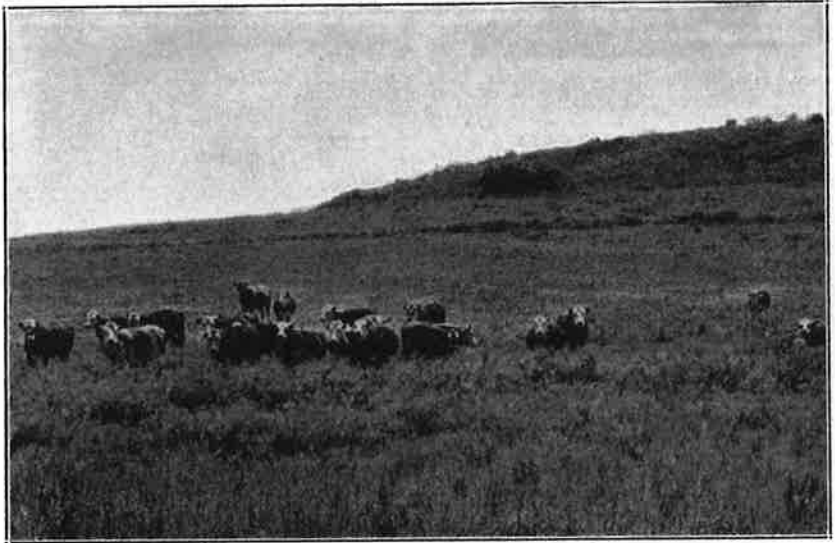


Fig. 19. Good Cattle Range.

dependent upon the way the cattle are handled and cared for. It is easy to understand that if the calf crop can be increased without materially adding to carrying cost, this will speed up production and increase revenue. With the average calf cost \$28.46, it is clearly obvious that heavy losses are often sustained in the sale of calves or of good breeding cows in calf. With few exceptions ranchers do not consider the costs represented in unborn calves carried by good brood cows which are disposed of in the beef herd. Low cow unit carrying costs and good calf crops are essential to success in the production and sale of calves.

More feed and better care are conducive to higher calf crops, heavier cattle, lower death loss, and greater gross receipts, but the added cost necessary to effect the change should be less than the additional revenue. Seasons vary, available feed supply changes, and each year practically every ranch is confronted with a different problem. Under these conditions definite conclusions with positive recommendations

would be subject to question. Cattle fed all they are capable of consuming will eat their heads off; on the other hand, starving a bunch of cattle through on poor range and scanty winter rations is likewise unprofitable. A happy medium must be reached for each ranch which will yield the best return for the money.

As shown on Charts Nos. 8 and 10 the largest item entering into carrying cost is feed. Feed cost is largely dependent upon the amount of hand feeds and the grazing expense required to keep cattle in reasonably good condition. As feed cost increases carrying cost also goes up, and higher calf crop, better quality and heavier cattle are necessary to offset it. Material increases in carrying cost are extremely difficult to overcome. With grazing expense and other conditions equal, the amount of hand feeds given range cattle should be held down to the minimum quantity that will carry them through the winter months in reasonably thrifty condition.

It is significant to note on Chart No. 11 that as carrying cost goes up

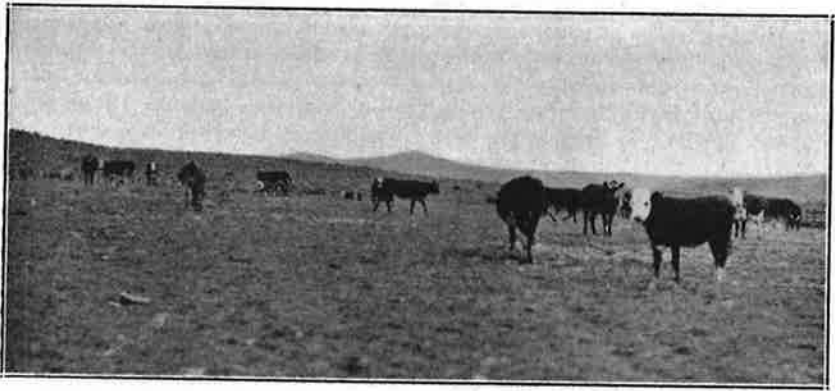


Fig. 20. Poor Cattle Range.

cattle production costs increase, in spite of higher calf crop. Death loss and bull costs show less variation and influence production costs to a correspondingly lesser degree.

Calf crop percentage has its greatest effect on the first cost of the calf. A comparison of Ranches E and Q on Chart No. 11 illustrates this point. Ranch E has the lowest carrying cost of the entire group, coupled with the lowest calf crop. Ranch Q has a carrying cost above the average and a high calf crop. Their production cost figures follow:

	<i>E</i>	<i>Q</i>
Carrying cost.....	\$9.97	\$15.40
Bull cost.....	.60	1.13
Death loss cost.....	1.29	.81
<hr/>		
Cow maintenance cost.....	\$11.86	\$17.34
Calf crop.....	50.53%	82.29%
Production cost at 6 months.....	\$23.47	\$21.07
Production cost at 24 months.....	37.27	41.25
Production cost at 36 months.....	48.39	57.50

After the first cost of the calf, carrying cost is the important factor affecting the production cost of older animals. Under these conditions

it is not surprising that in actual practice Ranch E has found it most profitable to sell mature cattle, while Ranch Q makes its best profit selling calves.

Accordingly it is evident that carrying cost has a greater influence on production cost of mature cattle than calf crop or any other factor. In other words, a low carrying cost is first in importance in range cattle production.

Natural advantages in one locality are often offset by disadvantages which balance costs. One ranch may have an extremely low operating cost, in which case it often has a low calf crop or high death loss, which increases production cost. The cattle produced are likely to be light-weight or scrubby, resulting in decreased revenue. Another outfit with a very different set of conditions may have a fairly high operation cost offset by a good calf crop, low death loss, and the production of heavy cattle of good quality.

Each operator, by experience, has to determine the management practices best suited to his ranch. That is undoubtedly why cattle ranches generally run behind when managers are changed frequently. What will work efficiently on one place is often out of the question on another, and to make blanket suggestions for all cattle ranches without reservations is indeed hazardous. The best that can be done is to present methods which have been found successful under stipulated conditions. Cattlemen can then put them in practice if their local conditions permit.

## APPENDIX

Costs herein cover the years 1928, 1929 and 1930. High wages and peak commodity prices prevailed. High operation costs ruled during the three years but demand and prices for beef cattle were good. In 1928 the top price f. o. b. loading point was eleven cents for range steers and nine cents for cows. In 1929 it was nine cents for steers and seven cents for cows, and in 1930, seven cents for steers and five cents for cows.

Articles and commodities consumed are charged at purchase price or production cost. Depreciation is charged on items of inventory value.

Some price examples follow, which picture conditions during this period:

### 1. LABOR (Ranch wages, board and lodging found)—

Common ranch hands.....	\$50.00 to \$60.00 per month
Irrigators.....	60.00 to 75.00 per month
Top cow hands.....	60.00 to 75.00 per month
Hay stackers.....	3.00 to 4.00 per day
Hay teamsters.....	2.50 to 3.50 per day

### 2. MANAGEMENT SALARY—Unpaid ranch managers are allowed a salary comparable with paid managers holding similar positions. The scale for ranch managers follows:

Under 500 head of cattle.....	\$1,440.00
500- 600 head of cattle.....	1,800.00
600- 900 head of cattle.....	2,160.00
900-1,400 head of cattle.....	2,520.00
1,400-1,900 head of cattle.....	2,880.00
1,900-2,400 head of cattle.....	3,240.00

### 3. FARM MACHINERY—

Mowing machines.....	\$100.00-\$110.00
Sulky rakes.....	75.00- 90.00
Buck rakes.....	85.00- 120.00
Spring tooth cultivators.....	140.00- 160.00
Light walking plows.....	30.00- 40.00
Manure spreaders.....	185.00- 200.00
Grain binders.....	225.00- 285.00

Hardware and repair parts proportionately in line.

### 4. EXPENDABLE SUPPLY COSTS—

Flour.....	\$3.45-\$4.00 per cwt.
Cane sugar.....	6.00- 8.50 per cwt.
Canned goods.....	2.50- 3.50 per case
Beans.....	7.00- 9.25 per cwt.
Coffee.....	.33- .50 per lb.

### 5. FEED—*Purchased*—

Hay.....	\$8.00-\$12.00 per ton in the stack
Cottonseed cake.....	45.00- 65.00 per ton
Grain.....	1.50- 3.00 per cwt.

#### *Ranch Produced*—

Hay.....from \$3.74 to \$9.34 per ton, averaging \$5.63 per ton  
 Grain.....cost figured from similar data applied to Nevada cattle ranch conditions. The price is \$1.50 per cwt.

6. **CATTLE**—Cattle prices were established on the basis of the first year's cost data. These values are held constant through the study for the purpose of computing production costs. Heifers are considered mature at two years of age. They are beginning to produce and earn; hence all mature cows are held at a constant figure.

6 months calf.....	\$28.50
Yearlings.....	34.50
2-year-old steers and mature cows.....	50.00
30 months stock steers.....	58.00
36 months beef steers.....	67.00

7. **OTHER LIVESTOCK** are valued at production costs computed from similar cost data applied to Nevada cattle ranch conditions where they are raised in small numbers considered sufficient to facilitate better operation of the ranch and not as a major enterprise.

<i>Horses and Mules</i> .....	Mature stock, 3 years and up.....	\$50.00
	2-year-olds.....	40.00
	Yearlings.....	26.75
	Suckling colts.....	20.00
	Stallions and jacks.....	200.00
<i>Sheep</i> .....	Mature ewes.....	11.25
	Yearlings.....	8.75
	Lambs.....	6.25
<i>Hogs</i> .....	Bucks.....	15.00
	Brood sows.....	8.40
	Shoats.....	5.60
	Pigs.....	2.80
	Boars.....	12.60
<i>Poultry</i> .....	Chickens and ducks.....	.75
	Turkeys and geese.....	2.75

8. **RANCH PRODUCED FOOD SUPPLIES** actually consumed during the year are charged at production cost, computed without interest from similar cost data, applied to Nevada cattle ranch conditions.

*Poultry and Dairy Produce—*

Eggs.....	\$0.30 per dozen
Whole milk.....	.10 per gallon
Skin milk.....	.02 per gallon
Chickens and ducks.....	.75 each
Turkeys and geese.....	2.75 each

*Orchard and Garden Produce—*

Potatoes.....	\$1.50 per cwt.
Apples.....	1.25 per cwt.
Root vegetables.....	3.00 per cwt.
Leaf vegetables.....	4.50 per cwt.

*Meats—*

	Live weight	Dressed weight
Veal.....	\$0.07	\$0.12
Beef.....	.06	.12
Pork.....	.07	.10
Lamb.....	.085	.175
Yearling sheep.....	.09	.18