The four chapters in this section, "Future Direction of the Beef Business," are interrelated and interdependent. Segmenting the general topic into four rather specific topics is a necessary expedient towards division of labor. "Cow-calf production" and "feedlot operations" are, of course, two topics, although the necessary interdependence between the two is apparent.

Ranching

The economics of ranching as a field of research endeavor has only recently been renewed after a dearth of studies for 15 to 20 years. In the 1920's and 1930's classic studies on ranch economics were published by Burdick of Colorado, Saunderson of Montana, Vass of Wyoming, M. B. Johnson of North Dakota and the USDA, and Hedges of Nebraska and the USDA. In the early and mid-1950's, led by Hopkin (then at Wyoming) and Baker and Gray (then at Montana), economic studies of ranching began to reappear.

Why has the field of ranch economics been neglected, at least in a relative sense? There are three and possibly four important reasons.

1. Even though ranching uses large areas of a state's land, there are few ranch units as compared to farm units.

2. The ranching region may be located long distances from the state's principal experiment station.

3. A lack of experience, training and/or interest in ranching existed among many economists.

4. A feeling that ranches were well adjusted to their resources and hence that no economic problem existed.

To have an economic problem there must be alternate uses for resources. Do alternatives exist for resources in ranching? One apparent alternative use of land suitable for cattle is for grazing by sheep. For a variety of reasons cattle ranching has increased while sheep ranching has decreased. Another alternative use for land in some regions is wheat. But for the vast ranching region the choice is cattle and cattle only. Nonetheless, considerable alternatives still exist within this framework. Clawson 3
has outlined three rather distinct cattle ranching types or alternatives:

1. Steer ranches. No breeding stock are kept; cattle are purchased and grazed for one or more seasons.

2. Cow-calf ranches. A breeding herd is kept and young stock (usually calves) are sold.

3. All-aged ranches. A breeding herd is kept and calves are raised to one or more years of age. Often stock sold is "grass fat" and can be slaughtered or finished further by another party.

Traditionally the main steer ranch areas have been in regions where an abundance of forage occurs at one season of the year: the Flint hills of Kansas, Osage hills of Oklahoma, foothill region of California, and the irrigated alfalfa pastures of California and Arizona.

Cow-calf ranches are scattered throughout the west but have been concentrated in Texas and the Southwest.

All-aged ranches, too, are found in almost every area of the West but typically have been centered in the Central and Northern Plains and Mountain areas.

Nauheim studied the organizational make-up of ranch types (Table 1). The all-aged ranches have greater flexibility than the strictly cow-calf operation. That is, in years of unfavorable range feed conditions the number of cattle can be cut back on a given range without selling part of the breeding herd. The all-aged ranch has been popular in the Central and Northern range areas since this is a region of highly variable and "bunched" rainfall, hence variable and "bunched" pasture and range conditions.

But for the gain of weather and feed flexibility there is a cost. Nauheim budgeted returns for each of the types of ranching studied and found that gross returns for the cow-calf operation were highest, returns for the cow-yearling operation were 95.5 per cent of the returns of the cow-calf operation while the most flexible type, cow-two year olds, had returns of 90.6 per cent of the first type. Which ranch type should be chosen? No single answer exists for every individual. Fundamentally the decision of substituting flexibility for income is more a psychological than economic

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4 Another type of operation, "pasture feeding," might be included. This is a hybrid operation, however, encompassing aspects of both ranching and feeding.

phenomenon. It can depend upon age, debt and family obligations, capital position, psychological make-up and numerous other factors.

Table 1. Three cowherd systems with different flexibilities (constant animal units)

<table>
<thead>
<tr>
<th>System</th>
<th>Cow-calf</th>
<th>Cow-Yrlg.</th>
<th>Cow-2 year old</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cows</td>
<td>75%</td>
<td>54%</td>
<td>39%</td>
</tr>
<tr>
<td>Calves</td>
<td>19%</td>
<td>14%</td>
<td>10%</td>
</tr>
<tr>
<td>Yearlings</td>
<td>6%</td>
<td>32%</td>
<td>22%</td>
</tr>
<tr>
<td>2 yr. olds</td>
<td>--</td>
<td>--</td>
<td>29%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Adapted from: Charles W. Nauheim, "Flexible Livestock Systems" in Management Strategies in Great Plains Farming, Great Plains Council Publication No. 19, M. P. 7, Nebraska Agricultural Experiment Station, August 1961, p. 86. Animal Units per head, Cow 1.0, Calf .3, Yearling .7, and 2-year old .9.

Is the make-up of ranch organization changing? Recent surveys and observations indicate that it has and is. In the summer of 1961 the Department of Agricultural Economics at the University of Nebraska began a study of economic aspects of cattle ranching in the Sandhills. The Sandhills is a large contiguous area and traditionally has been an all-aged ranching region. Basically it remains that. However, a tendency is noted toward selling younger cattle, in a good many instances almost strictly cow-calf operations occur. Of the more than 100 ranches surveyed only two were selling three-year old cattle.

Empirical evidence fully supports the assumption that all-aged ranches are selling younger cattle than, say, 20 years ago. But this may well be the case because of (1) an improved financial situation on ranches and (2) an increased demand for young feeder stock.

Ranching is a relatively prosperous industry at present; nonetheless profit margins are narrowing and much of the return is being priced away in ranch land. For example, the price of land has risen much more rapidly in the ranching area of Nebraska as compared to the state as a whole. (see Fig. 1) The impact of bidding up prices of ranch land may not be felt by certain individuals in the short run. That is, as long as the land price
Fig. 1.

A Comparison of Indexes of Land Prices in the Sandhills Region with the State Average for Nebraska.

increases (or decreases) and the individual is not buying (or selling) land the cash returns will not be affected and the question is academic. In the long run when ranches change hands and consequently are refinanced, the impact of high land prices may place a heavy burden on that generation.

The owner of a well organized, large (about 27 sections) ranch recently budgeted out income for the coming years. By using the price originally paid for the land he calculated a rate earned on the investment approaching 12 per cent. However, land for this ranch was acquired in the 1930's and early 1940's. By calculating the rate earned on the investment at the current value of the land he figured that only about 3 per cent was earned. This ranch is one of the better adjusted and managed organizations in the area.

Another example of the financial situation of the ranching area is found in a recent study of labor returns in Nebraska. In the ranching region investment per ranch increased 166 per cent from 1949 to 1959 while average per farm investment for the state increased 101 per cent. Residual returns to labor and management per ranch unit increased less than 14 per cent (1949-1959) while similar returns per farm for the state increased over 20 per cent.

**Future Trends in Ranching**

It has been noted that many all-aged ranches may have moved closer to the calf selling organization type in recent years. In the next decade this trend may cease or be reversed. (An increase in two or three year old operations is not necessarily expected, however.) First, there is a need for flexibility in the Central and Northern Plains. Second, hay reserves provide the means for that flexibility. These are advantages other areas do not have.

Another factor influencing ranching is the growth of cattle feeding on a commercial basis. This will be an area of competition between the relatively small farm feeder and the rancher. If the growth of the commercial lots continues, demand for heavier feeder animals may increase; that is, if the commercial feeder wants to fill his lots three or four times each year, then calves at 350 to 500 pounds will not be appropriate. The question is: Who will provide the "intermediate" poundage from a weanling calf at 375 pounds to a 600 to 800 pound feeder animal the commercial feeder wants? The farmer-feeder may fill this role because of great part of any advantage he has is in the use of low

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6Neil R. Cook, "Labor Productivity on Nebraska Farms", M. S. Thesis, Department of Agricultural Economics, University of Nebraska, 1961.
7This region is economic area 1 in Nebraska. Most of the Sandhills ranching area is included but also some wheat and general farming are included in area 1.
opportunity cost feeds (stalks, some hays and roughages, small grain pastures, wet corn, etc.) and labor. On the other hand, the rancher may be competing for the opportunity of selling the intermediate weight. Ranches may have several advantages:

1. The all-age ranch is organized to sell heavier feeder cattle.

2. Fall calving is increasing and could be accelerated. Such calving results in heavier feeder calves.

3. Opportunities exist in many areas for pasture feeding.

Table 2. Cattle and calves: Number on feed by 12 leading states, January 1, average for 1949-58 and annual 1959 and 1960.\(^a\)

<table>
<thead>
<tr>
<th>State</th>
<th>1949-58 Rank</th>
<th>1959 Rank</th>
<th>1960 Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iowa</td>
<td>1,118</td>
<td>1,425</td>
<td>1,510</td>
</tr>
<tr>
<td>Illinois</td>
<td>572</td>
<td>643</td>
<td>688</td>
</tr>
<tr>
<td>Nebraska</td>
<td>545</td>
<td>637</td>
<td>665</td>
</tr>
<tr>
<td>California</td>
<td>361</td>
<td>504</td>
<td>663</td>
</tr>
<tr>
<td>Minnesota</td>
<td>323</td>
<td>400</td>
<td>416</td>
</tr>
<tr>
<td>Missouri</td>
<td>254</td>
<td>292</td>
<td>298</td>
</tr>
<tr>
<td>Colorado</td>
<td>248</td>
<td>338</td>
<td>385</td>
</tr>
<tr>
<td>Indiana</td>
<td>239</td>
<td>255</td>
<td>224</td>
</tr>
<tr>
<td>Kansas</td>
<td>228</td>
<td>229</td>
<td>293</td>
</tr>
<tr>
<td>South Dakota</td>
<td>208</td>
<td>269</td>
<td>247</td>
</tr>
<tr>
<td>Texas</td>
<td>156</td>
<td>184</td>
<td>239</td>
</tr>
<tr>
<td>Arizona</td>
<td>131</td>
<td>210</td>
<td>265</td>
</tr>
</tbody>
</table>

\(^a\) Estimates include cattle being fattened for market as a more or less distinct agricultural enterprise, and exclude small operations incidental to dairy and general farming. Cattle thus fed are presumed to produce carcasses that will grade good or better.

\(^b\) For average 1949-58, Ohio ranked 12th with 152,000 head.

Cattle feeding is in a state of evolution. Not only are the locations of cattle feeding shifting, but the size and methods of feedlot operations are changing. As indicated in Table 2, changes in rank among leading cattle feeding states have taken place and additional changes may be forthcoming. Note the small differences in number of cattle fed in 1960 among Illinois, Nebraska, and California. Over the period shown, Colorado has replaced Missouri for sixth place; South Dakota, Kansas, and Texas have changed but little in relative ranking while Indiana has declined from eighth place to twelfth, and Arizona has moved up from thirteenth to ninth place.

Changes in the Cattle Feeding Industry. During the 1930's, the increase in cattle fed in the United States was only 6.1 per cent. However, in 1949, 26 per cent more cattle were fed than in 1940, and in 1959, 50 per cent more than in 1950 (Fig. 2). However, only since 1950 has the rate of beef production exceeded to any appreciable extent the rate of population growth in the United States.

This section is drawn chiefly from Robert M. Finley and Ralph D. Johnson, "Changes in the Cattle Feeding Industry of Nebraska", Bul. 476, Nebraska Agricultural Experiment Station. (In press).

Some authorities believe that the expansion limits of the cattle feeding industry in California have been reached. Dean & McCorkle estimate that cattle fed in California feed lots in 1975 will be equal only to the average levels of 1955-1958. See G. W. Dean and Co., O. McCorkle, Jr., Projections Related to California Agriculture in 1975, Bul. 778, California Agricultural Experiment Station, University of California, April 1961.
The rapid increase in cattle feeding which occurred in the 1940's and 1950's was undoubtedly due to improved economic and weather conditions, improved technology in feeding and feed grain production, increased population and an increase in consumer preference for beef. The per capita consumption of beef increased 49 per cent from 1940-1959, while the per capita consumption of all other red meats (pork, veal, mutton and lamb) generally declined or held constant.

Cattle Feeding Regions. Even though there is some cattle feeding in all 50 states it is important in only 26. The 26 important cattle feeding states are located in five of the six geographic regions of the United States.
Cattle feeding is important in all of the states in three of the regions—West, West North Central and East North Central. In the other three regions, only Oklahoma, Texas and Pennsylvania feed an appreciable number. In this analysis, Pennsylvania will be included in the East North Central region and Oklahoma and Texas will be included in the Western region.

A considerable increase in number of cattle fed occurred in all three of the regions from 1940 to 1959 (Fig. 3). The number of cattle fed increased 36 per cent in the East North Central region, 81.7 per cent in the West North Central region, and 145.4 per cent in the Western region.

![Graph showing percent of cattle and calves on feed by geographic regions, 1940-1959.](image)

**Figure 3.** Percent of cattle and calves on feed (January 1) by geographic regions, 1940-1959.

**Source:** U.S. Department of Agriculture, *Agricultural Statistics, 1940-1960.*

Substantial changes also occurred in the per cent of the nation's cattle fed by regions (Fig. 3). In 1940, 28 per cent of the cattle were fed in the East North Central Region, 51 per cent in the West North Central Region and 21 per cent in the Western region. By 1959, these
percentages had changed to 21 per cent for the East North Central, 51 per cent for the West North Central and 28 per cent for the Western region.

The long run regional trends can probably best be explained by comparing the long run national increase with that of the individual states within each region. From 1940 to 1959, cattle feeding in the United States increased 83 per cent. As previously indicated, feeding in the East North Central Region increased only 36 per cent. The largest increase in any of the states in the East North Central Region was 69 per cent in Wisconsin.

In the West North Central region feeding in three of the states increased less than the national increase of 83 per cent and four increased more than the national rate; total cattle feeding increased only slightly less than the national rate -- 82 per cent from 1940 to 1959. An important reason that cattle feeding has not increased more rapidly in this region is because the rate of increase in two of the leading states in 1940 was far less than the national rate. Minnesota and Missouri, which were second and third (in the West North Central Region) in 1940, increased only 36 and 10 per cent, respectively, and ranked third and fourth in 1959.

In Iowa, which ranked first in the region and the nation in 1940 and 1959, cattle feeding increased 85 per cent. Nebraska and South Dakota, which were fourth and sixth in the region in 1940, increased 178 and 199 per cent and ranked second and fifth in 1959. Had it not been for the rapid increase in Nebraska and South Dakota, the West North Central region would not have been able to keep pace with the national rate.

In the Western region, cattle feeding increased more than the national rate (83 per cent) in nine of the thirteen states. Feeding in four states increased more than 100 per cent; four increased at least 200 per cent; and one increased almost 500 per cent. Of the four states where cattle feeding increased less than 83 per cent, only Texas ranked in the top regional four in 1949 and in 1959. In the other three top-ranked states, feeding increased as follows: California 271 per cent, Colorado 150 per cent, and Arizona 228 per cent. In Washington, which ranked twelfth in the region in 1940, cattle feeding increased 497 per cent and was ranked sixth in 1959.

The trend toward larger and more specialized feeding operations that began during World War II continued during the 1950's. As indicated in Table 3 the small feeder (less than 50 head) still dominates in terms of numbers; however, the proportion of cattle fed by such operators has declined drastically. On the other hand, a small proportion of feeders (less than 4 per cent) now feed about two-fifths of the cattle. Although not shown in Table 3, the concentration of cattle feeding in Nebraska is even more marked; 1 per cent of operators feed 23.4 per cent of the cattle and .4 per cent feed almost 15 per cent of the cattle. While these data emphasize Nebraska, the general trends noted are applicable to other feeding
Table 3. Changes in distribution of cattle feeding by size of operation, percentage of operators, and percentage of cattle fed from 1950-1959, Nebraska.\textsuperscript{a}

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1-49</td>
<td>87.6</td>
<td>78.0</td>
<td>44.0</td>
<td>28.3</td>
</tr>
<tr>
<td>50-199</td>
<td>10.8</td>
<td>18.4</td>
<td>31.3</td>
<td>32.1</td>
</tr>
<tr>
<td>200+</td>
<td>1.6</td>
<td>3.6</td>
<td>24.7</td>
<td>39.6</td>
</tr>
</tbody>
</table>

\textsuperscript{a} Annual State Farm Assessor's Census Records.

A factor that may have a heavy impact upon both the ranching and cattle feeding industry in the near future is the possibility that wheat may be priced as a feed grain. Numerous experiments have shown that wheat is a most satisfactory feed grain. Whereas little wheat has been fed in recent years, before and during World War II considerable wheat was used as livestock feed. In fact in the 10 year period 1935 to 1944 almost 3 1/2 times as much wheat was fed than was exported. There is considerable speculation regarding where the feed wheat be fed. Some lack of suitable roughage existing in many wheat areas may prove to be a deterrent to finishing cattle. On the other hand, a joint product of wheat and wheat pasture may encourage finishing cattle.\textsuperscript{10}

In summary, the general trends for the feeding industry depend upon:

1. Growth of commercial cattle feeding.
2. Changes in feed grain base.
3. Changes in population and location.
4. Changes in government policy, credit and tenure.

\textsuperscript{10} It should be noted that recent feeding trials have been conducted that require little or no roughage.