History of Grazing In The West

by

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Introduction

The purpose of this paper is to show the major practices of the pioneer stockmen in founding the livestock industry of the West. This report will attempt to point out the errors made by the private stockmen and the federal administration in managing the grazing lands of the United States. After giving a fairly clear picture of the present condition of the ranges and the reasons for their depletion, I will present a grazing policy and management plan that should be put into effect as I see the problem from my viewpoint and that of others who have studied the situation.

The problem of sound grazing practices is not only important as a major industry in 14 of our Western states, but also as a problem that related to other industries and public interests. By this I mean, control of erosion, watershed protection, wild life shelter, and the aesthetic value. A knowledge of the practices that have laid the majority of western ranges to lands of low productivity and tax burdens, will give us a better chance to cope with the matter in the future and enable us to take a more scientific outlook.

The information contained within this paper is the combined material from library research and actual observations of the ranges of Eastern Oregon which I have made during my life as the son of a stockman. At all times in
preparing this report, I have based all my material on facts and not that of prejudiced opinion.

EARLY OWNERSHIP OF THE RANGE LAND

After the purchase of the Louisiana Territory, the United States became the owner of millions of acres that they had never seen let alone know for what purpose it should be used. Next with the annexation of Texas along with the land ceded by by Mexico, the Federal government was confronted with the problem of use and disposal of all these vast acres. The opinion of the men in power at that time was varied, but as a whole they thought the land to be, more or less a barren waste land that needed very little attention. This fact can be brought by the report read to Congress by a member on a committee on public lands. In 1842 the following report was given: "Here is a country stretching all the way from the Red river to the Canadian boundary which seems to have been delivered by province to be the home for the red man. Beyond the Missouri could never be utilized the white man, it must ever remain the home of the wild tribes who roam over these frightful and horrifying wastes."

At this time the gold strikes had been made in California and few years later the slavery question became a national issue and as a result the matter of the public land disposal was forgotten for the time. With the end of the Civil War, people began looking West. The Homestead law of 1862 made it possible for a man to obtain 160 acres, but to government who found itself in a position of more land then it knew what to do with, the 160 acre Homestead law was not near fast enough. As a result many laws were
passed within the next few years, among the more important ones were the Soldier script act, timber culture claims, railroad grants, mineral laws, and enlarged homestead laws. To average individual this policy seemed sensible in that the United States at that time was making this a nation of home builders, but the fallacy in the policy laid in the fact that no attempt was made to classify the lands. Lands that should never have been plowed were being blocked out into wheat farms, only to bring failure after the first few crops were taken off. The ownership pattern was broken up into such a muddled affair that as many as five to six owners would all be intermixed, making operations difficult due to lack of unity. The administration failed to realize that the same laws that applied to the fertile valleys of the Central states could not be used in administering the lands of the range area. It took more land to support a family on the semi-arid lands of the West and this account s for the great number of failures of the 160 and 320 acre homesteads.

Of all the lands given away by the government, the railroad grants have presented one the greatest problems. To several of the major railroads, the government gave more than 101,000,000 acres for the building of the several more important transcontinental railways. Of this land, the railroads have disposed of the greater portion. But the method in which they have used in disposing of it has been anything but conducive to better land use. It has been sold all over the world under more or less by high pressure
salesmanship. Pretty pictures were painted as to how these lands could be made to produce bountiful crops and as a result many thousands of acres have been plowed up that should never have been used for anything but grazing. The railroads now realize that the success of their lines depend upon the success of the communities through which their lines run.

Texas whose area is greater than that of all New England states, entered the United States under the condition that she keep all her lands. After joining the Union, Texas was confronted with the problem of getting rid of her lands so as to induce settlers and obtain revenue. It has been said many times that Texas used every thing down to lottery in order to get her lands into private ownership. Many outright grants were given to counties, schools, and other public agencies for improvements. The major part of the land was given away outright to settlers who would band together in any one community.

With this land disposal policy in mind, it will be interesting to see how the public and in particular the stockman reacted.

**STOCKMEN OF THE 19TH CENTURY**

The Western grazing industry had its birth in Texas where the Spanish cattle had been introduced from Mexico. Due to the favorable climate and abundance of natural forage, the cattle thrived and at the end of the Civil War, Texas had more cattle than she had markets. This overstocking of cattle was the main factor that led to the birth of the
trail drives that led from Texas to railroad points in Kansas and other out bordering states. These herds that were driven ranged from 2 to 15 thousand head in size and were made up of grown stock from 3 to 5 years old. The herds were started in early summer and were slowly grazed until they reached the railroad where they were shipped to Chicago and Eastern markets.

This new outlet for cattle immediately made it one of the boom industries of the country and almost over night ranches in Texas grew into large companies that controlled high as 250,000 head of cattle and over 3 million acres of land.²

For the first year or so, business men watched Texas flourish in the beef industry, then they too got the idea that beef could be raised on the Northern ranges. At first the young stock was bought in Texas and trailed to ranges further North where they were fattened and sold in one year, as stockmen thought that the winters were to severe for the cattle to winter on the range. Then by chance some herd was lost and they were forced to remain out on the open range during the winter, but to the stockmen's surprise they come through with little loss. This was the beginning of cattle raising in the states north of Texas, and at once there was a boom in the cattle business.

The typical rancher of this day, was one who bought or homesteaded some small tract of land which controlled the surrounding free range. Here he established his headquarters and thought nothing of the land around him as being something
he should manage like any other object that had physical limitations, instead his one objective was to raise the greatest number of stock possible. He didn't have any knowledge as to how range should be handled, and the general belief at that time was that the grass was something more or less inexhaustible. The cow business when it first began in the Northern plain states, was considered a boom business that would last only a short time, and that the thing to do was to make the best of it while possible. The stock industry in the 1870's even attracted Foreign interests and at one time there were ten foreign cattle companies in the plain states.⁴

The early stockmen had no set plan of management but let their cattle roam the ranges the year around without any thought to supplementary feed. This method of grazing gave good results at first as the cattle grazed where they pleased and with the ample natural forage very good quality of beef was produced. In other words, the first stockmen had practically an utopia for producing beef, but it could not last as other conflicting factors began to enter. The first was the so called nester. With the news of the success of the livestock reaching the heavier populated centers of the east, new settlers began coming West and filing claim legally to the free range. At first the stockmen fought bitterly against them by using force, but they soon realized that the law was with the nester and then they began the practice of land fraud. Since any single man could file claim to 160 to 320 acres, the cattle barons had their own
ranch hands file on the more strategic points on their range, such as water holes, meadows, and other favorable locations. In this way they could control the many acres of public domain which bordered these points. I know of one incident of a livestock company in Eastern Oregon that had its shepherders file claim to all the better surrounding land, while they furnished the improvements for the land, and then they swore in court that the men had lived their required amount of time on the land. This case was taken to court and several convictions were made and land was thrown open to reentery. This is just one of the many cases that the federal land office discovered, but many thousands of acres were taken up under the same false pretenses.

Gradually with the influx of more and more settlers, along with the change in range conditions, the great cattle and sheep barons were forced out of existence, however few large corporations have withstood the changes, but the trend is today of more livestock men but on a smaller scale.

**GRAZING PRACTICES AND THEIR TOLL**

It has been mentioned before that the pioneer stockman used a rule of thumb management that brought about ruin to his ranges, but to show some specific examples of his poor management the following practices are listed.

1. Premature grazing.
2. Continuous grazing.
3. Overstocking.
4. Grazing in spring while soil is still wet.
5. Wrong type of stock for grazing area.
6. Poor distribution through management.

The above listed practices have been listed as the main factors that have resulted in the present depleted condition of our Western ranges. They were the factors discovered and endorsed by a survey carried on by the Oxford Forestry Memoirs of 1935.

Premature grazing is that use of the range when the grass is just beginning to send out its new shoots for the year. It has a very harmful effect upon the forage as it doesn't give the plant a chance to get a start before it is grazed off and as a result it must call on its reserve food supply. Another effect is trampling of the soil by the animals as they must go over much more ground to obtain the same amount of forage then if it were more advanced. It also has a detrimental effect on the stock as they can't get the required amount of forage and the forage they do get has a low amount of food nutrients as it is very succulent. As a result, animals that are in comparatively good condition when turned out of the winter feed ground will become in a weakened condition if turned out to graze on the range that is not sufficiently advanced.

Continuous grazing which is the grazing of stock on the same area all through the year and year in and year out. This practice has done much deplete the range. This method of grazing didn't give the grass a chance to store up food or regenerate, as a result in many cases the land has been practically denuded. The financial conditions of the stock-
man has been responsible for much of the continuous grazing of his own lands, as he was always trying to produce the greatest amount possible, without realizing the injury he was doing to his land. The public domain which has been grazed continuously for fifty years, it is a different set-up. In most all cases it has been unfenced and has been a place where it could catch all the loose stock from the surrounding areas at all times, and as a result it has been treated with thoughtful the slightest thought to the after effects. In some cases the public domain has been leased to private individuals to use as they saw fit, and as a result they used in the worst way. It can hardly be expected that the private operators would use the public lands in a rational manner if they would not even treat their own lands in the proper way.

Overstocking or overgrazing as it is sometimes termed is merely placing more stock on the area than it can naturally carry. The effects of this practice are many and serious. If carried on for any length of time the more palatable species begin to disappear and they are replaced by the more inferior species. Slight erosion is noticed and as time goes on the land deteriorates more and more until in many cases today, we have only barren lands that are badly eroded. Overstocking has been the result of the unstable conditions of markets. In the better times, the stockman had in mind to produce the greatest amount of livestock possible while the prices were right. Then the usual slump in prices that follow boom times always arrives and the stockmen hold on to their stock rather than to take the
loss at first. One of the best examples of this is the case of Texas in 1885 when the Texas fever was first found. In the spring of 1885, there were more than 9,000,000 cows in Texas which had only 175,587,340 acres in all. Counting every acre as range land this only gave about 20 acres of land per cow, but in Texas at this time there were thousands of horses, mules and goats. Also the southwestern part of the state was hardly grazed as it was semi-arid. When conditions such as this arise, not only does the owners finally take their loss on the livestock, but also the land goes through a period of overstocking.7

Grazing while the soil is wet has done much to induce erosion through puddling and packing of the soil. It has cut done the amount aeration which tends to reduce plant growth. To early use of the range has come about mostly through the fact that most stockmen find it hard to feed supplementary forage late into the spring. Also many stockmen do not have range that is divided into low and high ranges which give them a chance to get their stock on to the range early in the spring.

Use of the range for the wrong type of stock has done much to put the ranges into a condition of low productivity. Cattle, sheep, and horses each have a particular kind of range which they like best, and if given the opportunity will use these ranges only. For example cattle prefer the more open smooth areas that have plenty of water and shade, while sheep rather graze in areas of more rougher topography with variety of grasses and browse. In cases
where cattle have been grazed on rough areas that are intermingled with meadows, it will be found that the cattle will graze the meadows first until the grass has been eaten down to the ground line, before they will branch out to the rougher areas. In case of horses they prefer the high open ridge tops, and will spend most of their time here, in this way, the forage on these particular areas is overgrazed while the amount of stock for the entire area is not to great. Much could be done to remedy this on public lands by classifying the land as to the type of stock to be used on it. The best example as to carrying out this classifying program is the forest service's method of classifying the allotments in the National forests.

Poor distribution of stock on the ranges due to management can be laid to neglect of the stockmen to use the proper methods of management. By poor management methods, I mean, poor watering methods, salting grounds, bedding grounds, and general handling of stock. The manner in which stock graze any area can greatly be controlled by the use of water and salt. Many a rancher has wondered why the grass in the back pasture was always better than that near the water hole or well. Cattle do not like to graze more than a mile to mile and half from water and back again, in this way, the grass on the areas further removed is not grazed until that near the water holes has been long overgrazed. The development of small seeps by piping water into troughs can greatly improve the grazing conditions. In the case of sheep, they can go without water for greater
length of time than cattle, and their direction of grazing can be more easily guided through the herder. Horses as a rule like to graze in the areas that are suitable to their liking; such as high open ridge tops, they will travel as far as ten miles to water.

Salting grounds should be so placed as to make the animals graze the areas in the desired manner. They should not be placed in locations of good forage, for they are places of great utilization for long as stock are on the area. They should be placed in spots of more or less rocky topography or in troughs in the less desirable forage areas. Since stock require salt in their feeding, it is rather simple to make stock graze in the desired direction as long as they know of the salt's where abouts. For example, if it is desired to make cattle feed back away from some stream on the foot hills, the salt could be placed back away from the water. In this manner you would have the cattle grazing back and forth between the water and the foothills.

The matter of bedding grounds has long been a sore spot between the Forest service and the stockmen. Probably the major reason for this has been, not the stockmen's fault but that of the herder. The fact that sheep like to stay in one certain spot each night, makes the herder more and more inclined to want to bed the sheep for weeks at a time in the same location. Another reason, is due to the fact that the temporary camps had to be moved each time, which tended to lead to staying longer then the required time in the one spot. This bedding in one place for more than one
night has a serious effect on the surrounding areas, as the sheep soon eat the grass off near by, then merely trail in and out for the first half mile or so before beginning to eat. The problem of bedding on the home range hasn't been such a great one, as the camps are more or less permanent with corrals for the sheep. But even here, much could be done if the animals were not trailed over the same route each night and morning. Since the all ready mentioned practices have been given the credit for the present conditions of our ranges, it will be timely to take up the conditions our present ranges compared to those of the virgin grasslands.

PRESENT RANGE LANDS COMPARED TO THE VIRGIN AREAS.

Before agricultural settlement by the white man, the virgin range comprised the western two-thirds of the United States. If nongrazable lands such as mountain tops, almost barren deserts and dense forests, are excluded, it encompassed nearly 850 million acres. As might be expected for so large an area, there were tremendous variations in topography, soil, and climate. These great differences in environment resulted in correspondingly great differences in the kind of vegetation. In some places the range was a natural grassland that stretched for mile upon mile without bush or tree to break differences in the kind of vegetation. Elsewhere the range was clothed with forests and places where brush and like shrubs grew. It could be said that the range was divided into three main classes of vegetation, grassland, brush, and forests. Of course these classes were broken up
into various local sub-types. The three greatest types of range as to their importance as forage and acreages were the tall grass areas, the short grass areas, and the Pacific bunchgrass. Other types of importance were, semidesert grass, sagebrush-grass, southern desert shrub and the salt-desert shrub.

No other range type has so decreased in size as the tall grass areas. The reason for the large decrease in size has been due to the plowing of the area for crop production. Of the former 252 million acres of tall grass, there remains today 18.5 million acres in range land. These remaining acres of range lands are in fairly good condition as a whole as the land the tall grass occupies is more fertile than most range lands and it has withstood the effects of the abuses of overgrazing.

![Graph of Grazing Capacity](image-url)

**Grazing capacity of the short-grass type.**

**Grazing capacity of the tall grass type.**
These charts show that the condition of the short grass lands is in more serious state than those lands in the tall grass type. The short-grass areas which are located West of the tall-grass areas have been subject to poorer treatment and the reason for the larger amount acreage per cow month is due to the decline in density of the plant cover. Much of this land has been plowed up at one time or other and then turned back into grazing lands with a result of bringing in inferior species. Over 94% of the short grass areas are on the decline and there are no good reason to believe that they will stop now unless some good practice of management is put into use.

The Pacific Bunchgrass is the most valuable grass type west of the Great Plains. Since settlement, however, it has lost much of its original importance because the total area of the type is smaller, and also because of a tremendous decline in the forage value of the remaining bunchgrass range. Much of the original acreage of this grass type has been plowed under for wheat production. Also the invasion of sagebrush has further decreased the area of the bunchgrass until now there remains only 42.5 million acres compared to the original 61 million acres. It takes today about 4½ acres per cow month in this area where it only required 2½ acres on the original area. This great reduction in forage value is due primarily to the thinning of the plant cover and the introduction of annual and weed plants. It is estimated that the bunchgrass area as a whole is badly depleted on more than
60% of the entire area. To show the average condition of the ranges is Oregon, Washington, and Idaho, the following table shows the comparison or condition of the ranges now and in their virgin state.

<table>
<thead>
<tr>
<th></th>
<th>virgin</th>
<th>present</th>
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<tbody>
<tr>
<td>Perennial grasses</td>
<td>76%</td>
<td>4%</td>
</tr>
<tr>
<td>Annual grasses</td>
<td>12</td>
<td>51</td>
</tr>
<tr>
<td>Weeds</td>
<td>10</td>
<td>35</td>
</tr>
<tr>
<td>Shrubs</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100</td>
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The alarming thing is the fact that depletion or digression has not stopped, but is continuing, and unless some for of good management is put into practice these ranges will become practically barren waste lands.

To sum up the condition of the entire range land, it would show figures something in this manner. The range depletion averages 67% on private, county, state, and Indian owned land. The national forest lands are estimated to be 70% of their normal condition. In the last 30 years only 16% of the entire range lands have improved and over 75% have been on the downgrade.

**WHAT RANGE DEPLETION MEANS TO THE UNITED STATES**

An accurate appraisal of just what the range depletion means to the United States cannot be made unless it has some social or economic importance. But the ranges of the West certainly do have both of these requirements, not only does it provide the forage for the millions of livestock, but it also provides watershed protection, wildlife preservation, recreation, and the integrated agriculture of which the range is an inseparable part.
The key to proper watershed protection on the lands of the West is to have the proper plant cover on the ranges. Over 85% of the important streams of the West get their supply of water from the lands that are used for grazing. From these lands; each year, millions of dollars worth of damage is done to property by the silt and rocks that are carried down in floods that could have been prevented. By the depleting the ranges of their plant cover, the soil has lost its water holding capacity so that the slightest rain will cause a run-off of water. Each flood that comes makes the problem a little more difficult as deeper gullies are cut and stream beds are cleared out until now the water has practically a mill race from the hills to the bottom lands below.14

The loss of plant cover has started erosion on practically all the grazing lands today, save for some of the areas in the heavily timbered areas. This erosion is taking a drastic toll not only in the damage it does below in the valleys, but to the soil itself. The top soil that is ordinarily rich in humus has been washed away, and now the other soil is carrying on a washing and leaching process that is robbing it of nitrogen and mineral salts. It will take many years of hard work and well managed grazing to get these lands back to normalcy, as in many places the gullies have become so severe that it will take actual work on the ground in building dams and reseeding before it will be possible to get the grass back on the lands.

One of the direct effects of erosion is the silting up of storage dams. This is especially true in the Southwest,
where the land is highly susceptible to erosion and also the irrigation in this area has been by installing many storage dams for this purpose. To give an example of cost in trying to prevent the silting of dams and canals, in the Imperial Valley of California it costs the farmers on an average of $2 per acre to carry on these activities. The Elephant Butte Reservoir in New Mexico has lost over 13% of its total capacity in the last 17 years, and at this rate will become completely silted in about another 125 years.

To show the importance of grazing lands to watershed protection, it is interesting to see how much of an investment they represent when figured as the backbone for the various reclamation and flood projects in the West. For the West as a whole the 475 million acres of range land that make up the watershed for the important water yielding, the average investment for each acre represented by dams, irrigated land and facilities, is $12.27.

Not much has been said in the past about the relation between range depletion and wildlife, however there is an important correlation between the two. Much of our game today is the type that requires more or less the same conditions as livestock, so as a result the wildlife has suffered. The most serious conflict has been between the deer, elk, antelope, and upland game birds. These big game animals require a summer and winter range, much like that of livestock. In summer they range in the higher areas and do not interfere with the livestock, but in winter they must go to lower levels and depend upon those areas fed off by the livestock earlier in the year. While there is no set rule as to what
crop should come first, it has been the practice in the past to let the livestock come first. Since both are a crop of the soil, there is no reason why the two could not be managed at the same time. In some places today, the trend has been over balanced the other way, by protecting the wild life until they have become a menace to the livestock industry as well as a menace to their own grazing areas. The problem is to work out a sound management plan by which the two can be raised rationally on the same or adjoining areas.

As a background for recreation, the wise use of the range is important in the National Forests. With our nation increasing in population and with the modern means of transportation, outdoor recreation has become one of the major industries of the nation. The greater part of the outdoor recreation is borne by the National Forests, and it is therefore highly important that the range areas within their boundaries be kept up to a high standard. At the present time the National Forests lead all other public or private agencies in range management, and no doubt this wise use is reflected by the number of recreationist that visit the forests. It is easily understood the damage that uncontrolled grazing would do to the recreation areas. The natural cover would be taken away, and later on the streams would not be stable in their flow as they are now.

The condition of the range land in the West is stabilizing factor of Western agriculture. It is an integrated part of agriculture that means the difference between the
low standard of living and the higher standard of living that the American people are seeking. When the cheap forage of the range is lost, the entire crop set up of the West is thrown out of adjustment, for the livestock men of the West depend upon this cheap forage for their margin of profit. The stockmen of the range states have realized almost to late that the fertile valley ranches and the less productive range land go hand in hand in making up of the stock industry. To give some idea as to how valuable the livestock industry is to the nation as a whole, the following figures were taken in 1930. The land, buildings, and other farm equipment in the range area was estimated at 11.5 billion dollars or 22% of the entire national wealth. The livestock on these areas had a valuation at 1.5 billion dollars. This is the value expressed in dollars only, but this same industry effects the lives of 2 million American families that reside in these areas.

**WHAT RANGE DEPLETION HAS DONE TO THE AVERAGE RANGE COMMUNITY**

It might be well to keep in mind that several agencies have worked hand in hand with range depletion as to their effects on Western communities, such as climatic fluctuation, and economic changes. When the livestock industry first began, the holdings were large up until the time the various land laws came into effect, and then the range territory was gradually settled more thickly. It was not uncommon to find the average livestock community to consist of one or two larger outfits that were intermingled with smaller owners, ranging from 320 acres to 2000 acres. If any lands
were located in more fertile spots, these might also be owned by various small owners. Then throughout these holdings of both the large and small owners would be the land that was part of the public domain or in some other form of public ownership. Naturally the public lands got to graze the stock of all the livestock owners to the utmost degree. As the years went by the lands of the owners and the public domain become less and less productive, until coupled with drought, they were not able to produce as many number of livestock as before. During these years, the cost of operation of these ranches hadn’t lessened, so the average rancher found himself, trying to obtain credit and in most cases succeeding. In the majority of the cases, the ranchers did not realize that it was the overstocking and not the weather conditions that was responsible for the lack of grass. The result was that instead of decreasing their herds, many stockmen bought more, for they thought that the way to make money was to raise the greatest number of stock possible. Then when the price of beef went down during the years of 1929, 1931, 1907, 1892 many of the stockmen could not stand the financial strain and their lands were foreclosed. The ranches were then sold by the various banks that had taken over ownership, to other people who may or may not have been a resident of the local community. But, in most cases, the ranches were generally sold at a price which was prohibitable to making a profit in the stock business, as a result the lands have changed hands many times
since the original owner. This has had a bad effect on the lands, as the owners utilized the lands to the utmost, without thought to good management along the way. Many of the lands have become tax delinquent along the way, and now many of the counties of the West find themselves the owners of many acres of land that will not pay for their upkeep. As a result of land depletion, we find today, the tendency towards ownership of larger tracts of land that has come into their ownership at a low price due to the public sales by counties. To the communities that used to support a school, roads, and homes for a number of families, we find them deserted, the school empty, and just vacant shacks where the one time homesteader or small stock man lived. Perhaps under rational treatment of the land he could have survived in many places, but now it is too late.

**WHAT SHOULD BE DONE TO PUT GRAZING ON A SOUND BASES**

To revive the grazing lands and to put the stock industry on a stable basis, there are several definite steps that must be taken. They are not hard and fast rules, but must be flexible to fit every different case, as hardly any two situations will be the same.

To those that have studied the problems from a scientific as well as a practical standpoint, there stands out the problem of use, ownership, administration, and management. The problem of use not only takes in the lands that are now being used for grazing, but also those lands which are now being dry farmed at a loss. These lands that have been plowed under to raise grains have during the past two decades
operated at a loss to the owner, and have greatly reduced the fertility of the soil through wind and water erosion. The greater part of these lands lie in the short grass plains in the Western parts of Kansas, Dakotas, and Nebraska. They were originally the highest type of grazing areas, but after the first several crops of grain were not fertile enough for this use. It is estimated by the Re-settlement Administration that in the 17 range states that about 44 million acres should be taken out of the present owner ship and be placed under federal control to managed under different methods. Of these 44 million acres there are 2 million acres that should be reverted back to timber production, 11 million acres of crop land that should go into the production range forage, and the remaining 32 million acres are range lands that should be put into economic units. Then there are the areas that are privately owned which are being so misused that they are seriously impairing other public interests. Such areas are watersheds, areas used heavily by wild life, and those areas that round out natural range units on and adjacent to National Forests. From a national standpoint it is more important to look out for the public interests rather than those of one individual, so the logical action is to get control of the areas by out-right purchase or land exchange.

There are several reasons why the ownership of land should be shifted. At the present the ownership pattern is much like that of a crazy-quilt disign. This irregular ownership has been due to the various land laws that have mentioned previously, but to review the situation, anyone sec-
tion of a county might be divided up between various private owners, county lands, state lands, and various forms of public ownership. This sort of ownership is highly undesirably in that it doesn't represent an economic unit for grazing. It makes carrying charges higher when the land of a stockman is separated by other owners. This added cost might mean the difference between a profit and loss in his business.

In majority of the instances of stock raising in the West of today, the operator can not afford to own himself, enough of the low grade grazing land to carry on his business. With the range in the condition of the present, it takes such a great capital investment in the land itself, that the interest and taxes are more than the industry can stand. The problem of cost would greatly be reduced if this land could be put into federal ownership to be leased back to the stockmen. In this way not only would the land be more sure of better grazing methods, but the owner would be paying less for the leasing of the land than if he were paying taxes and interest on the same. The counties under this set up would be more likely to obtain revenue than they are under the present tax method which has been more or less a hit and miss affair. The Taylor Grazing Act of 1934 has been the first big step towards putting the low production lands into one large unit. Under the grazing district lands set-up the state receives 50% of the income rather than 25% as under the National forest plan. This money goes into the general state fund and then is allotted back to the counties in no relation as to the amount
each has in the grazing districts.

As to the administration of the grazing lands, there are two schools of thought as how they should be handled. Today the lands are being managed under the department of agriculture through the United States forest service, and the department of interior which has charge of the public domain and the Taylor Grazing Act lands. It seems that it might be logical to have two divisions of grazing administration as the lands themselves tend to be divided into two distinct types. Those lands that are more valuable for watershed protection and timber production. The other division of lands are those that make up the lower foothills and plains, which produce only pasture forage. Yet it seems reasonable that it would be wise to have all the lands under one department which could be divided up into sub-departments. At the present time there is agitation to change this set-up, but it met defeat at the last meeting of congress.

Another item that should be taken into consideration before going into the actual management of the range, is the financial backing of the stockmen. It has been in the past to do credit business with the near by banks, but the stockmen now realize that in order to make a success of their operation, they must obtain financial backing over a long period of time at a low rate of interest. Up until the time of the recent depression, the average stockman of the West tried to operate on six to eight month notes that drew from 6-8% interest which probably is higher than the
average stockman can ever pay again. The Federal land banks have been the first to give out long time loans at a comparatively low rate of interest ranging from 4-6%. These loans were on the land only, but the desirable set-up would be credit that would be extended on a long time basis on the entire operation at interest rate from $\frac{1}{2}$-4%. The principal and the interest being paid off in equal annual payments. This would tend to stabilize the entire industry and give the stockman a sound basis on which to work for a number of years, rather than to try to deplete his resources and pay at any one time. This may take federal backing to make possible these types of loans, but since it is a national interest at stake, it would be a wise move to give it their financial support.

The actual management plan will have to be flexible to fit all the different problems that arise in managing any one large tract of land. It is easy to see that a plan made for the Pacific bunchgrass area will more than likely not the plains area and their short and tall grass. Taking an assumption that the land has been placed into the desired ownership and use units a management plan would look something like the following plan.3

**MANAGEMENT PLAN**

The objective of a range management plan is to guide the use of range lands so as to build up a stable and highly productive stock industry by as complete utilization of the forage crops as is consistent with permanency of forage production and the protection of other land use. To
obtain the **above** objectives, there are several steps that must be taken before **actually** applying a system of grazing. These steps are taking a survey of the range and then applying the results to the management plan. The survey can vary from an extensive to a very intensive survey by various recommended methods. Some of the latest surveys have been by the line plot method that gave a fairly accurate results.

The desirable survey should show accurately the amount of forage present, the dominant species by their density, type of stock suitable for area, data to determine the opening and closing date, other important land uses, factors that are pertinent to grazing, such as salt grounds, watering facilities, and topography.

From the data obtained in the survey the next step is to obtain result from the office procedure.

1. **Grazing capacity.**

   This number of animal units is found by applying the density of the forage found on the area times its palatability rating. This figure is then multiplied by the total percent of the area of this specie giving the total amount of forage. This figure divided by the forage acre factor will give the number of cow months that the land will support. In case of sheep the figure is multiplied by 5 as 1 cow month is equal to support 5 sheep. This result is for normal conditions, but if climatic conditions are not normal, allowances should be made.
2. Type of stock to be grazed.

This will be determined by the topography of the area and the type of forage present on the area. It has been covered previously in the report as to the type of range for the various classes of stock.

3. Periods of use.

The opening and closing date of the grazing area will be governed by the climatic conditions as they control the time of maturity of the forage.

**Grazing systems.**

The type of system will vary with the specie and the type of forage, but there are three recognized systems that have been used to a good advantage in the past. The deferred and rotation grazing, continual moderate grazing, and alternate grazing, each having its advantage in certain localities.

Deferred and rotation grazing reduced to its simplest form means dividing the range into from three to five units and deferring grazing on one unit each year until after the seed crop has matured. By so treating a new unit each year the entire area will be rested and grazed in rotation. The system, developed on mountain ranges, is primarily applicable to stands of perennial grasses that are chiefly dependent upon seed for their perpetuation. The deferred and rotation system is especially adapted to use on sheep range. The close control under which the band is held makes the system usable without the cost of fencing. With cattle and horses the system becomes more complicated. In application, the number of divisions of the range is based on the period of...
grazing left after seed maturity. For example, if one-fifth of the season remains after seed maturity, the range may be divided into five parts and each year one of the five parts is turned into idleness until the end of the season. After the seed has ripened, the stock are moved to the area and in grazing over it help to scatter the seeds and cover them with soil.

Continual moderate grazing is more suitable than deferred and rotation on (1) ranges used yearlong, such as those of the Southwest; (2) on many cattle ranges where it is not now feasible to construct the fences and structures required to control the movement of the stock; (3) for those important forage species that are not dependent on seed for reproduction. This system does not require the careful watching of the stock as in the afore mentioned system. It is highly important that the range isn't overstocked to begin with, as they are going to be on the same area at all times.

Alternate grazing is limited to where it is possible to move the stock around at intervals. This system works better on the irrigated pastures of vallies. There is however a system which resembles this in that it is year long grazing with intermittent years of exclusion. This is sometimes practiced by the forest service in administrating their grazing lands. 3

CONCLUSION

I fully realize that this is a broad subject and much can be said about the mistakes and practices of the past. I have endeavored to point out the major errors in the ex-
periences of the early stockmen in establishing the stock-
industry of the West, however this is all water under the
bridge, and the problem is the right the wrongs and to
bring the ranges back towards normal. The present thought
of the average stockman is whether they can stand the
pressure of carrying on their businesses while the lands
are being rejuvenated. The government has realized at
last the value of the livestock industry and are taking
an active interest in it at the present time, so it seems
with average climatic and financial conditions over the
next fifty years, the Western ranges will be lifted up
to where they stood 30 years ago.
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