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Rangelands

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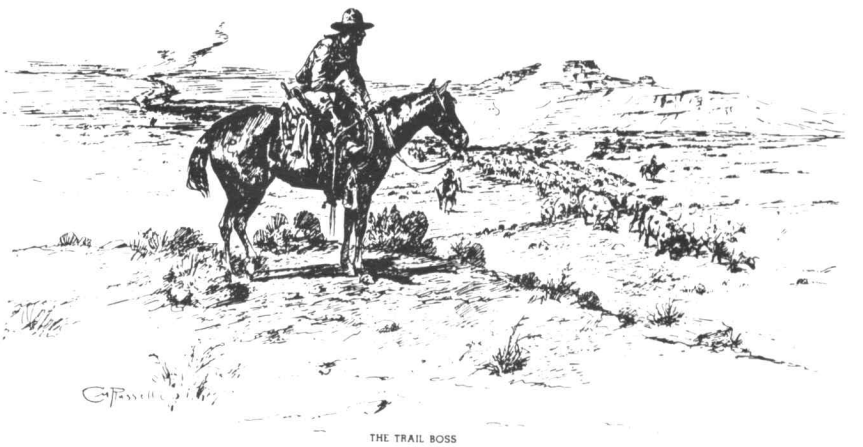
SOCIETY FOR RANGE MANAGEMENT



THE TRAIL BOSS

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The objectives for which the corporation is established are:

—to develop an understanding of range ecosystems and of the principles applicable to the management of range resources;

—to assist all who work with range resources to keep abreast of new findings and techniques in the science and art of range management;

—to improve the effectiveness of range management to obtain from range resources the products and values necessary for man's welfare;

—to create a public appreciation of the economic and social benefits to be obtained from the range environment;

—to promote professional development of its members.

Membership in the Society for Range Management is open to anyone engaged in or interested in any aspect of the study, management, or use of rangelands. Please contact the Executive Secretary for details.

Rangelands serves as a forum for the presentation and discussion of facts, ideas, and philosophies pertaining to the study, management, and use of rangelands and their several resources. Accordingly, all material published herein is signed and reflects the individual views of the authors and is not necessarily an official position of the Society. Manuscripts from any source—nonmembers as well as members—are welcome and will be given every consideration by the editors. **Rangelands** is the nontechnical counterpart of the **Journal of Range Management;** therefore, manuscripts and news items submitted for publication in **Rangelands** should be of a nontechnical nature and germane to the broad field of range management. Editorial comment by an individual is always welcome and subject to acceptance by the editor, will be published as a "Viewpoint."

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COVER: Danny Freeman, editor of *Rangelands* gets a thrill of a lifetime in receiving the Society's Renner Award. For other award winners see page 87. Photo courtesy of Prescott *Courier* and photographer Craig Howson.

The Commons Reconsidered

Jere Lee Gilles and Keith Jamtgaard

The rapid expansion of the great deserts of the world has caused considerable concern among environmentalists and government officials. Presently as much as 19% of the world's surface is threatened by encroaching deserts. One of the causes of desertification is overgrazing by domesticated animals. While the most dramatic examples of overgrazing may be found in the Middle East and the Sahelian region of Africa, it is also a problem in the world's industrialized regions. It has been estimated that roughly 75% of the publicly held rangeland and 60% of the privately held ranges in the United States are in fair to poor condition as a result of overgrazing.

The simple, compelling, logic of range management suggests that no livestock producer would consciously overgraze. Yet in spite of this, overgrazing is extremely common. The contradiction between the apparent economic interest that producers have in preserving pastures and their tendency to overgraze has long been a subject of concern. The social and institutional constraints to proper range use appear to be greater barriers than the purely technical ones. Among these factors, land tenure arrangements have been singled out as a primary concern. Much of the world's grazing land is either commonly or publicly owned. Overgrazing on these ranges appears to be more serious than on many privately owned pastures. Thus public or common pasture ownership has been singled out as a threat to proper range management. This may not always be the case for as we will see below there are many situations where common ownership is desirable and beneficial. Readers may find a more detailed treatment of this subject in Gilles and Jamtgaard (1981).

Land Tenure and Overgrazing

The link between land tenure and overgrazing has been made explicit by Garrett Hardin in his classic article the "Tragedy of the Commons." Hardin used the example of a common pasture to demonstrate why many commonly held resources—water, air, pastures, fisheries, etc. have been overused to the point of destruction. Hardin argues that any commonly held resource that is exploited by individuals but is collectively owned will be overused. A common pasture is defined as one that is owned by a collectivity upon which all members may graze animals. Because the pasture belongs to all, it is impossible for one member of the group to exclude another's animals.

Common pastures become overgrazed when they are shared by large numbers of people and when the number of animals placed on a pasture approach its grazing capacity. Once this point has been reached rational pasture management requires that no additional animals be allowed to graze on the commons. Additional animals will lead to the destruction of valuable forage plants and to a decline in the amount of animal products coming from the commons.

While it is against a group's interest to overgraze the commons, overgrazing still occurs. Common ownership of rangeland creates a basic contradiction between group and individual goals. When an individual adds another animal to an overgrazed pasture he or she receives all of the benefits of owning an additional animal but the costs of overgrazing are shared with everyone who uses the commons. As a result the benefits of overgrazing will always exceed the costs for an individual. All those who share the commons have an incentive to overgraze. People who do not attempt to increase herd size are, in fact, penalized because the productivity of their herds will be reduced as a result of the overgrazing of their neighbors. As long as individuals cannot prevent others from overstocking, it is also in their best interests to overstock.

Hardin and others have argued that the most effective way to eliminate overgrazing is to replace commonly owned pastures with privately owned ones. Although they recognize that public ownership or regulation of common resources might be an alternative to private ownership, they feel that private ownership of natural resources provides the only stable solution to the problem of resource depletion.

Although Hardin's arguements are not based upon a scientific study of common pasture systems, many range managers have also argued that the lack of privately owned pastures is a major cause of overgrazing. For example, "Tragedy of the Commons" has been used to explain the severe effects of drought in the Sahel. However, in most of Africa, conditions preclude the development of individually owned ranches. For these reasons most proposals to reduce overgrazing in African pastoral areas include the introduction of collective ownership of rangelands in the form of group ranches or grazing cooperatives. In Turkey the government has curtailed range management research and extension programs because it believes that the existence of common pastures makes all range improvement impossible.

Although Hardin and others who have dealt with the common resource question would be quick to point out that land tenure is only one of the causes of overgrazing, the lack of privately owned rangelands is seen to be its principal cause. This line of reasoning tends to ignore both the advantages of common pasture systems and the poor conditions of many privately held rangelands today.

Editor's Note: Gilles is a rural sociologist and has worked in Morocco, Kenya, and Chad, and Peru. Jamtgaard has worked in Peru and Ecuador. They are with the Department of Rural Sociology, University of Missouri-Columbia.

"Bofedal" or naturally irrigated pasture at 14,000 feet near Cusco, Peru.

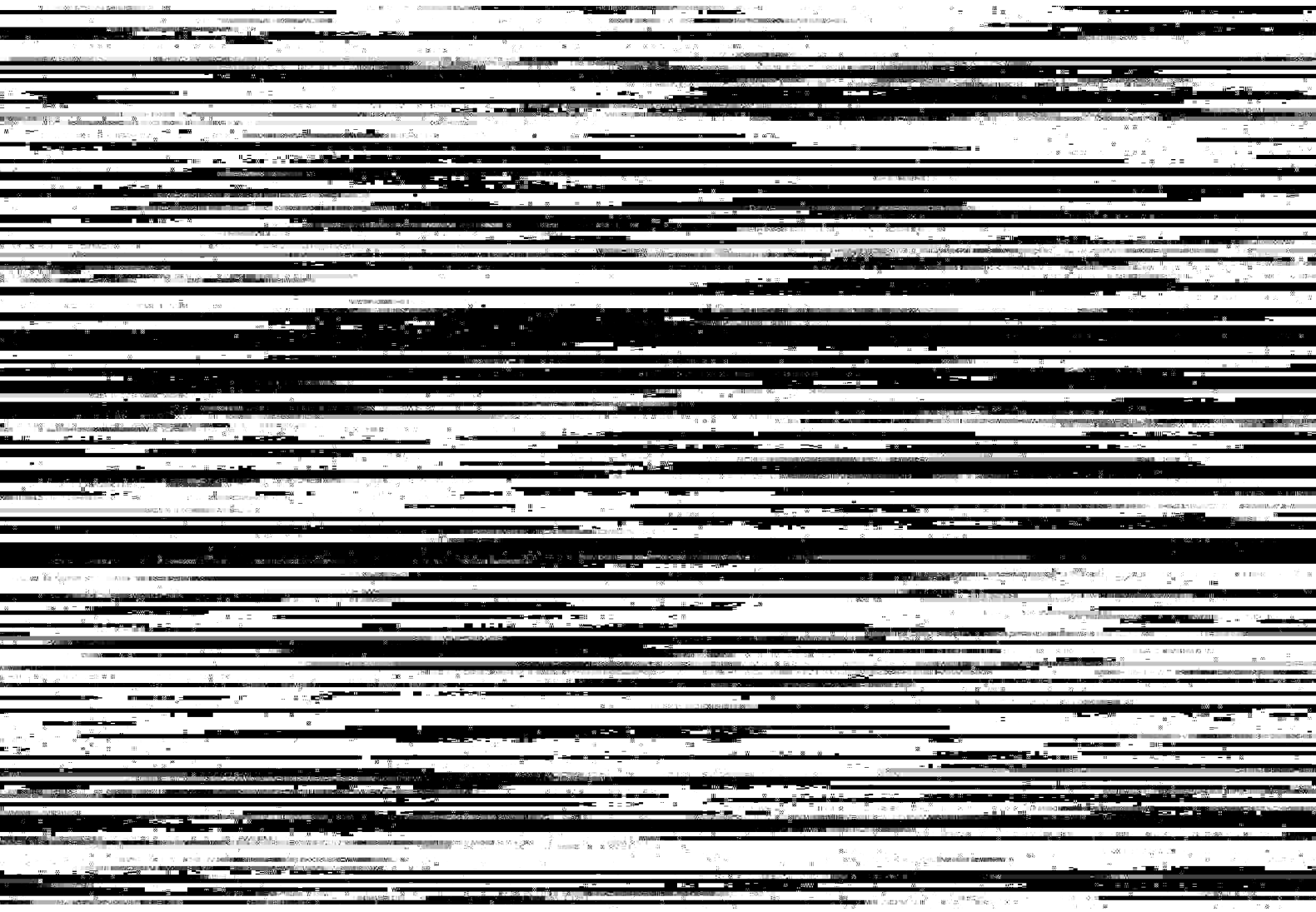
The Case for the Commons

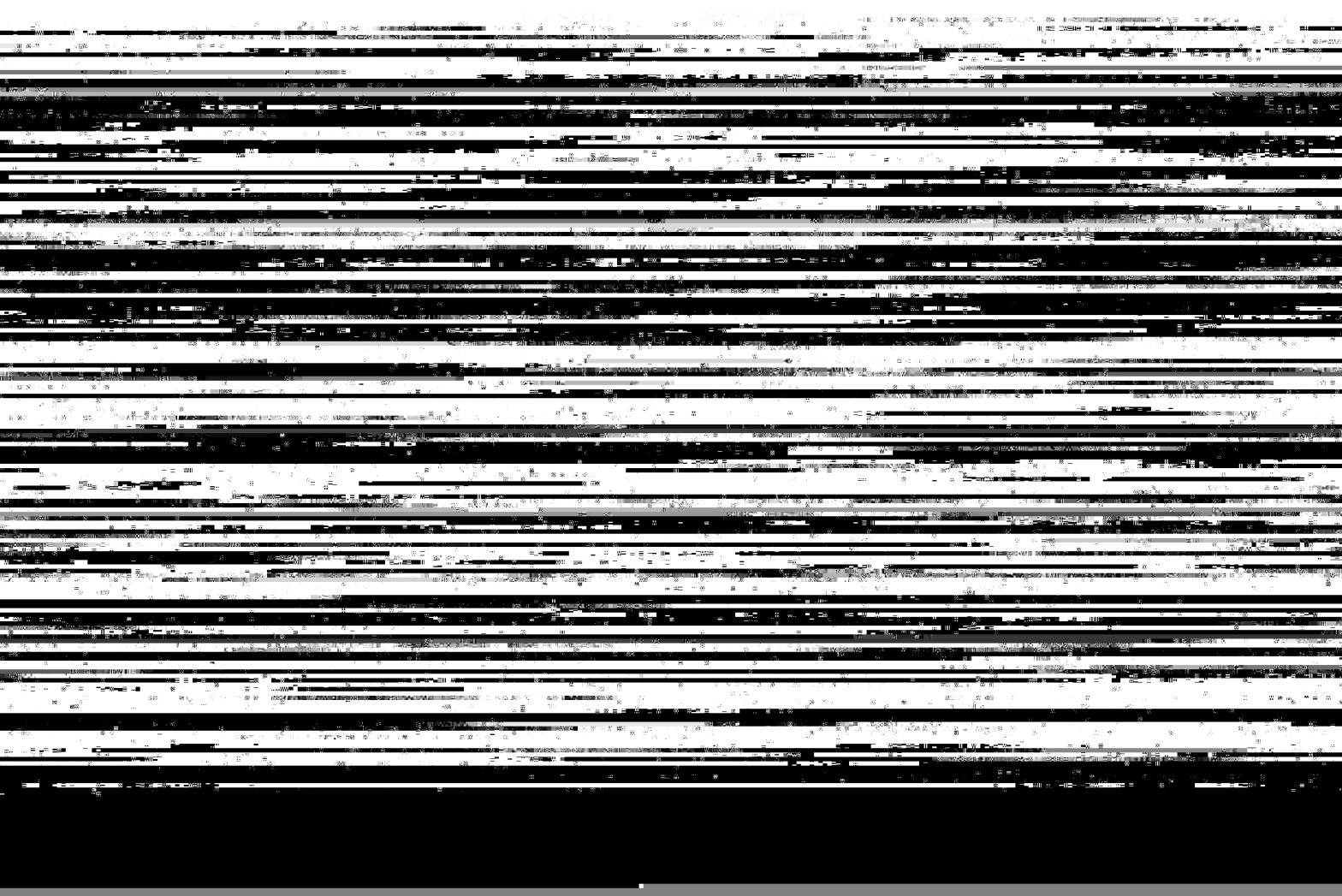
Eliminating common ownership of rangeland pastures will not end overgrazing. Overgrazing remains a problem on privately managed rangeland in the United States and Australia. Although overstocking is more serious on publicly owned lands in these nations, ownership may not totally explain overgrazing. In both countries public grazing lands are leased to individuals and lessees treat their leases much as they would their own property.

There are, in fact, at least two instances where the private ownership of rangeland may facilitate overgrazing. The first is the situation in which there are alternative low risk investments that would provide the same rate of return as that of a soundly managed livestock operation. Under these conditions producers would overstock their pastures when prices permitted high short run rates of return. Extra profits could then be invested in other enterprises and the profits from these investments would, in the long run, exceed those of a properly managed ranch.

The second situation is where the size of holdings is not large enough to provide an adequate standard of living for

Large expanses of open range are particularly needed when the quality of pasture in a given area varies considerably from year to year. This is a situation in some alpine pastures, and in the pastoral areas of Africa and Central Asia. For example, in the tropical and subtropical rangelands of the Sahel and East Africa rainfall varies considerably from year to year. But, more importantly, rainfall is unevenly distributed over an area in any given year. Rain is usually produced in this region by individual storms creating narrow rainfall paths with inter-storm areas remaining quite dry. As a result of this pattern of rainfall, a traveller on horseback early in the rainy season can easily pass through several spots in a single day that are saturated with water and full of grass and others that have not received any rainfall. The proper utilization of such pastures requires that livestock producers have the freedom to move animals over a large area in order to efficiently use available forage resources. Masai herders in Africa with herds of 30–100 cows must have access to over 100,000 hectares of rangeland to cope with this situation. Common pastures in Africa and elsewhere are used by large numbers of people with small herds. The conversion





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the amount which the Mims had to pay for the previous improvements.

After getting the stock watered, the next most important thing was to get water in the house for domestic purposes. Like all Australian houses, their first home had a corrugated sheet metal roof. Eave troughs and spouts conducted rain water into a large water tank beside the house. Inside the house the rain water could be drawn from a faucet for drinking. Many of the outback Australians think that rain water is the only water fit to drink.

To make available a larger supply of rain water for domestic use Hadden purchased a dumpy level and laid out a reservoir one kilometer downslope from the house. From minor drainage channels shallow dikes and ditches were constructed to divert rain water into the reservoir. A windmill was installed along with a storage tank close to the house.

Next came a second-hand petrol engine and a 32-volt generator. From new and used parts Hadden assembled a switch-control board. By putting these together with a 32-volt storage battery electricity was provided for lighting to replace kerosene lamps. During the early years they used a kerosene refrigerator too.

By the time the Mimses got the bores in shape, the old fences cobbled up, and a new division fence on the boundary line there was fairly good forage on Tucson. Because of drouth there was a shortage of feed on many stations. Thus, Hadden was able to get ewes on shares to stock his place.

By 1970 they had the place in operator condition and fully stocked. Things were looking rosy but as always happens on Australian Downs—just as on the Northern Great Plains—there came another drouth. Wool went down to 30 cents a pound. They kept 3,000 young ewes and their lambs; the rest were sold for pet food. The remaining sheep had to be moved 200 miles to get pasture to keep them alive—just as I shipped 200 cows and calves in 1934 from Ismay to Phillipsburg to stay in the cow business.

By that time Hadden and Jeanne had three children; Michael, the youngest, was three months old. Hadden closed the station and got a job on a neighboring station to buy groceries until the drouth was over. They returned frequently to Tucson to keep the fences and watering facilities in shape. After about nine months the drouth broke with an eight-inch rain in one night.

Since then the Mimses have done well. They put in a diesel 230-volt A.C. electric generating plant which they ran continuously for refrigerators and evaporative coolers for the house.

In the early years they had no shearing shed and took their sheep to a neighbor's shed for shearing. At first they had to use their neighbor's equipment, but gradually they accumulated some. A little over a mile from the house Hadden built his own six-shearer shearing plant with corrals, shed, shearing floor, shearing machinery and hydraulic wool press to bale the wool. All this equipment required electricity to operate. They acquired another diesel generating plant which supplied electricity to the shearing shed and could serve also as a spare for use at the house.

When they could afford it they moved another house of the same general construction and placed it beside the first. With a little carpenter work this became the commodious ranch house where we visited them.

About a year before our visit Rural power arrived at Tucson. Whether on the Northern Plains or on the Mitchell Grass Downs, government or cooperative high-voltage electricity

Hadden mustering sheep for shearing, climbs on top of vehicle to scan the paddock with binoculars.

certainly makes for more comfortable living. Rural Power is now available at the ranch house and the shearing shed. Distances are so long and posts are so scarce that the power lines have very long spans and only one wire. The return electric current is carried by the ground, the same as for one-wire telephone lines. The transformer poles carry a notice, "19,000 volt earthern system carries current, no cultivation over 9 inches deep within a 20-foot radius." This gives the inference that there must be radials buried around the pole to make the ground connection to the transformer which reduces the 19,000 volts to 230 volts—standard house voltage in Australia.

Before the line came, the bore near the shearing plant had gone bad, making a new one necessary. The old bore, like many in the area, was marginal for domestic use because of heavy mineralization. The new hole went a little deeper. Hadden equipped it with a submerged electric pump and ran a pipeline to the ranch house supply tank. The new bore brought in a very adequate flow of potable quality water for domestic use. Before the power line and new bore, the house reservoir went low in drouth years and the greatest economies in domestic water use had to be practiced. Now Jeanne has ample and can even water a small garden.

At first the children were taught at home. Queensland had a course of study for station children who could not attend regular school. In addition, "School on the Air" lectures were available on radio for use by home-taught children.

Now, Michael, eleven years old, attends school in Winton. Each school morning he drives a jeep-type vehicle 15 miles to where he is picked up by a school bus and driven 20 miles to Winton. At the end of the school day the process is reversed so he can spend nights at home. Cay and David, Michael's older sister and brother, are of high school age. As is the English custom they attend boarding school in Brisbane, about 900 miles from home.

Jeanne is inclined to believe that if the local people, particularly station owners, got behind it they could get more years of school at Winton. Hadden, in the English tradition, tends to believe there is merit in the boarding school. Personally, since I experienced the limitations of a small town high school, I tend to side with Hadden—but Mary Ann sides with Jeanne.

The vegetation map of Australia shows Tucson to be on the tropical savannah grasslands. The dominant perennial grasses on the station are Mitchell grass (*Astrebla* sp.) so the general area is called "The Mitchell Grass Downs". *Astrebla lappacea,* curley Mitchell grass, is considered one of the more desirable species. The most conspicuous undesirable grass is *Aristida latafolia,* feathertop wire grass. Its seed contaminates wool and is coarse and generally undesirable. Feather top fills the roll that *Stipa comata,* needle-and-thread, plays on the Great Plains of North America as an undesirable for sheep. Valuable annual grasses are *Iseilema membranaceum,* small flinders grass and *I. vaginiflorum,* red flinders grass which are fine and very palatable to sheep. The most useful shrub for grazing sheep is *Acacia farmesiana,* mimosa bush. Also grazed is *Salsola kali,* the soft, roly poly annual related to our Great Plains tumble weed or Russian thistle. Most of the trees that give the station its savannah aspect are different species of eucalypts. The scattered trees on Tucson serve the most useful purpose in providing shade for sheep during the hot January summers.

Livestock are pastured the year around and practically no supplemental feeding is done. Hadden said, "Some experimenting was done with silage in the middle 1950's. You couldn't get it out of the pits and the sheep weren't too keen about it." Hadden uses urea as a supplement for ewes when they are suckling lambs. A patented flipflop device mounts on the water trough under the water exit end of the pipe from the turkey nest and dumps a fixed quantity of water each time it flips. Each cycle actuates a plunger that dumps a precise amount of urea. In this way an optimum amount of urea is automatically maintained in the drinking water.

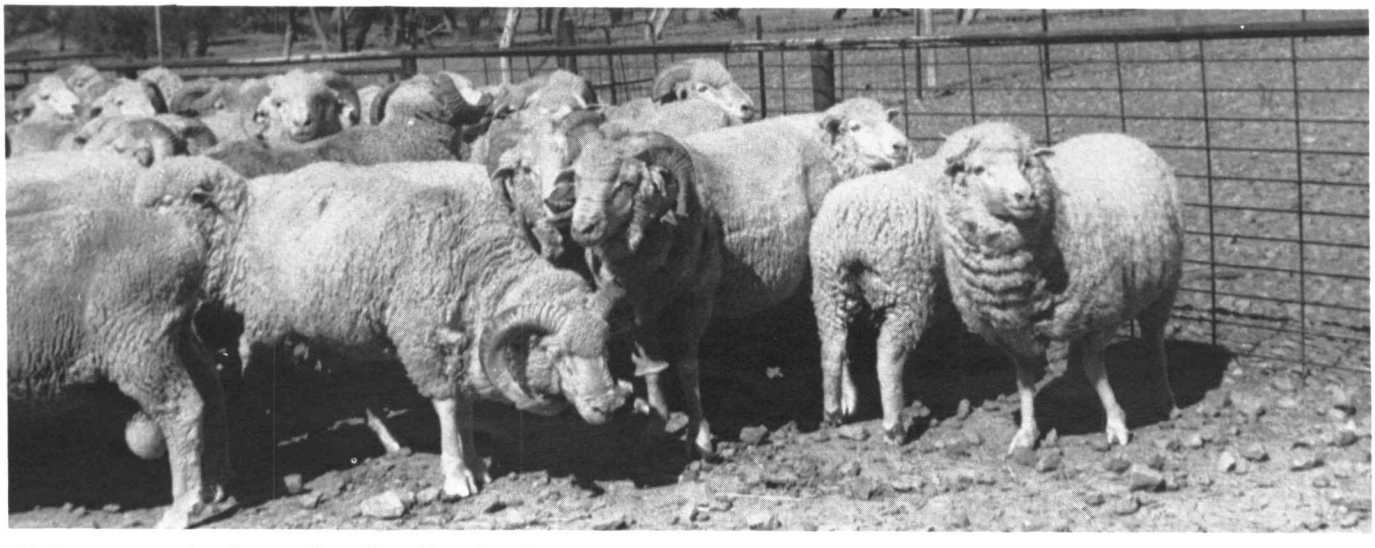
Since there is a shortage of supplemental feed and because the watering places are few, "lambing" consists of leaving them alone. The ewes are turned loose in the paddock and lamb themselves. Lamb percentages are low. Feral pigs, foxes and eagles are the predators. Captain Cook discovered the continent and purposely planted pigs as a source of food for shipwrecked sailors. The foxes were brought to chase with hounds, and the eagles are native. Ranch vehicles carry .22 caliber rifles and pigs are shot whenever possible. At times government hunters are called on to thin them out. Because eagles are quite numerous during lambing—Hadden then carries a .243 caliber target rifle with telescope sight for scaring them.

The wild dog known as the dingo was present in Australia when the Europeans arrived, but it is not considered native. It is believed to have been introduced by the aborigines a few thousand years ago. The productive sheep industry in Queensland is made possible by thousands of miles of fence which excludes the dingo. The high fence consists of woven wire, and woven wire of the same width is laid flat on the ground beside the upright wire to prevent burrowing under by the dingo.

The older fences on the station were conventional with either woven wire or several smooth wires with stays. These fences are very vulnerable to either kangaroos or emus. They have poor sight and little intelligence so they crash and break down ordinary fences. Mims' newer fences are what he calls "suspension fences." They have stretch points one mile apart and line posts one chain (66 feet) apart. A high tension steel wire is tightly stretched and can support woven wire attached to it by wire clips. Another, and perhaps preferable, alternative is to use six high-tension wires appropriately spaced. Formed wire stays are available and used at intervals between the widely-spaced line posts. To support the strain of these tightly-stretched wires the stretch points consist of three well-set and braced posts instead of the two that are commonly used on the plains of North America. When a kangaroo or emu hits a suspension fence the fence lies down, the animal falls over the fence and then the fence pops right back up into position to prevent passage of sheep.

In addition to the loss caused by primitive lambing methods and predators, there is a lamb loss from tetanus which is endemic in Australia. In some years, as in the year preceding our visit, drouth and short feed caused lambs to be in poor condition so that heavy rains increased lamb deaths. Overall, the reproductive rate is only slightly above that necessary to maintain numbers. This allows very little culling; wethers must be kept to produce wool and there is little or no lamb sale income. The wethers are run to about six years of age when they are sold for about $25 per head. They are purchased by Iranians and others and transported live to those countries where only fresh meat can be utilized because of lack of refrigeration.

These factors make the wool crop the primary source of income. We had timed our visit to see the April shearing. In Montana we lambed in May, just before summer. In Australia Mims lambs in May, just before winter. There, as in Montana,



Merino rams used at Tucson. Open faced hornless sheep on right are cross bred sheep to be killed to provide mutton for use on the station.

there are advantages to shearing before lambing. When we left in early May, after shearing, the ewes were due to start lambing soon. The wethers would be sheared in late May.

Since we were there during shearing we had the opportunity to see the pastures, fences, and the roundup of sheep for shearing. We soon learned that in Australia you don't round-up a pasture—you "muster a paddock."

This brings us to an important characteristic of Tucson and of a large part of Australia. As in North Dakota, "You can see forever." The entire 50 square miles of Tucson are so level that it is not too difficult to do all the mustering with vehicles. All the station is drained; there are no lakes, but gradients are so modest that very little gullying occurs even on the fire breaks that Hadden maintains with a conventional road grader.

The ewes were in one paddock, the yearlings another, and the wethers in a third. We saw the mustering of the ewes and yearlings. Three vehicles were used and all had radios for intercommunication while mustering. The only communication problem was some foreign language interference which Hadden said might be Formosan fishermen on the Gulf of Carpentaria. Hadden had a dog in his vehicle. If he found three or four sheep a mile or more from the other sheep he would send the dog out to catch them one at a time. He would pick them up and put them in his vehicle, tying three legs together so they couldn't jump out. If there were a sick fly-struck sheep that couldn't keep up he would use the dog to catch it, and then load it in. Jeanne had a stock rack on her vehicle. Hadden would call her at appropriate times to come over to his vehicle and they would transfer the sheep to the stock rack for transport to the corrals.

In Australia there are no bunches, bands, or flocks or droves of sheep or other animals. There is only a "mob." There was a small holding paddock close to the shearing shed where he could keep the mob for a short time in preparation for shearing. After the mob was mustered from the paddock we had to "draft the mob through the race to separate the rams and late lambs from the ewes." In Montana we say we "put the band through the cutting chute."

Tucson, as would any sheep ranch, had quite a mob of late long-tailed lambs. We got to see Hadden dock these lambs. He used a knife on the tails and elastrater rubber rings on the males. Then we got to see the "mulesing" operation which most sheepmen perform on all lambs. The name of the operation came from a man, J.H.W. Mules, who must have developed and/or promoted the operation. It consists of removing the skin on either side and top of tail with sharp shears. The resulting scar tissue will not grow wool. This helps to keep the area clean. Michalk (1980) noted that the operation does not eliminate fly-strike, but it significantly reduces mortality.

After that the shearing started, the all important annual harvest. The heavy production of light-shrinking wool and the grading of the wool before baling were just as we had heard about before we came. I was really surprised by the method of holding the sheep and the strokes and methods of shearing. Back around 1915 I used to visit with Harry Woodruff, a shearer and manager of the shearing plant at Ismay for several years. He had sheared in Missouri before coming to Montana. When he got with a professional crew in Montana they taught him the latest technique of holding and shearing the sheep that had been developed in Australia and was called the "Australian stroke." Later we had a small shearing plant and under Harry's tutelege occasionally I would shear a sheep or two. After all those years it was a surprise to find they still do it the same way today in Australia. Apparently they figured it out right the first time so have not had to change.

Jeanne and Mary Ann took smoko (lunch or tea) to the shearers each morning and afternoon.

A shearer first shears the belly. In Montana we left this belly wool with the fleece to be tied together and sacked, but in Australia the belly wool is thrown to one side to be picked up later by the board boy and baled separately from the other wool.

When a sheep is sheared the board boy picks up the fleece, already minus the bellies and locks, and tosses it onto the slotted sorting table so it lands more or less spread out, fleece side up. The classer and his assistant skirt the fleece, removing the stained and off-grade wool around the perimeter. The classer then throws it into the proper bin for its class. Because of those well-bred improved Spanish Merinos used at Tucson and widely throughout the range area of Australia, the big bulk of the wool goes into a top class of fine, long staple, light shrinking wool. Hadden estimated that his top line would yield 70% wool with 30% shrink—unheard of in eastern Montana for fine wool.

Coarser, shorter staple fleeces with a break, or cotted wool, was removed from the main line. Each was put into its own bin so the press man could bale each class in separate bales. He weighed each bale and marked the bale number, class, weight and the station identification on each bale.

Fencing in Tucson includes lanes so that by setting gates the sheared sheep are automatically turned back into the desired paddock. This cuts down on labor requirements as does the small airplane which Hadden has and uses to locate missed sheep after mustering. The plane also makes short work of the ever-necessary routine of checking the bores and watering places. It also helps with shopping trips to Longreach, 100 miles away.

Fires are a constant danger. Hadden has purchased a road grader which is used to construct and maintain fire breaks and the landing strip. He has built five miles of telephone line that connects him with his neighbors. When fire danger is high he and his neighbors keep watch, while keeping in touch by telephone. With maps and bearings computed to each station, spotting from two stations will locate a fire by triangulation. The year previous to our visit, Tucson lost several hundred sheep in a fire.

Besides local use, the telephone system has a toll connec-

Dr. M.M. Kelso and his daughter, Jeanne Mims.

tion so long distance calls are possible. The phones are magneto type and at the end of each call a ring-off signal is appropriate.

To summarize briefly the economics of the overall operation—Tucson now consists of nearly 33,000 acres. An unused stock driveway adjacent to the original 31,325-acre lease has been added. In 1980, the total rent plus tax on the land was roughly $3,200. I didn't learn the details of taxation, but was told that the local tax was the same on leased land as it was on owned land.

In round numbers, the station runs 10,000 sheep which shear 100,000 pounds of wool annually. At recent prices of $1.50 that comes to 150,000 Australian dollars gross annual income. That it is a going and viable operation is indicated by the well-kept-up appearance of the property; bores and watering places in good condition, fences well maintained, and livestock in good condition. A well-kept prosperous "ranch" is a realistic description of Tucson station. The new car with which Jeanne had met us at Longreach put it almost on the edge of affluence. The creation of this economically viable range livestock operation in a 16-year period is a credit to Hadden's and Jeanne's management ability and hard work. They do all the routine work on the station; the only hired labor is contract work. The main contract jobs each year are shearing—including classing and pressing the wool—and docking, including the mulesing operation.

At the time of the drawing in the 1965 Homestead Selection some in the neighborhood thought the Mimses would fail as the station is smaller than most in the area, but efficient management along with a cooperative efficient working relationship made the operation a success.

Compared to the Northern Great Plains, the Mitchell Grass Downs has many less failures. Following World War I a few small homesteads were set up and failed, but even these places were of several square miles. Usually, they were soon consolidated with each other or with adjoining properties.

Selwyn Park, a neighboring abandoned property, consists of 19,510 acres and lies in a less productive area than Tucson. It proved too small; the family on it couldn't make a living and abandoned the place in 1968. It is still vacant. Contrast this with the Northern Great Plains where we had hundreds of 160-acre homesteads, thousands of 320-acre homesteads, and only slightly less than a 100 percent rate of failure. We had able, hard-working people there, too.

The striking difference is tenure. Dean Hamilton (1957) noted that there was no way a ranchman could acquire title to enough public land for a ranch. Nor was there any way to lease it. This gets us back to the Michalk (1980) article.

In Australia regulations are minimal and tenure is good. That is the difference. It is tenure that allows Hadden to operate a viable sheep station. John Merrill, 1981 SRM president, stated: "I see no reason that operators should not be able to pay for . . . range improvements . . . with permits granted long enough to . . . recover the investments." The Australian experience bears out the truth of that statement.

Mary Ann and I had a most delightful experience in visiting Hadden and Jeanne at Tucson. Compared to *Failure on the Plains* which she, my typist, and I had just finished, the opportunity to observe the success of Tucson on the Mitchell Grass Downs was like a deep breath of fresh air.

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DO YOU NEED SPACE?

If you need space for a Society committee meeting or Society activity during the 36th Annual Meeting in Albuquerque, contact:

Don D. Sylvester
Local Arrangements
P.O. Box 2007
Albuquerque, N.M. 87103

Let us know by *July 31, 1982.* State size of room preferred, number of people expected, days needed, period of time needed and committee/activity involved.

Grassland Agriculture-Serving Mankind

Robert F. Barnes

Grassland agriculture may be described as the art and science of cultivating forage crops, pasture, and rangelands for food and fiber production. Grassland systems are dependent upon grasses, legumes, and some woody sources of forage; as well as upon managers for proper land use and increased animal profitability.

It is important to understand the terminology associated with grasslands. Efforts have been made in the past to document such terminology. I commend such efforts, for I feel that there is a continuing need for clarifying terms and their use. Although there may be some discrepancies, I urge that we orient our thinking toward the following definitions:

Grasslands—Moore (1970) used the term to denote all plant communities on which animals are fed, annually sown crops excepted.

Forages—Henzel (1981) uses the term broadly to comprise all plant materials eaten by herbivores, including those that are grazed (pastures) and those that are cut before being fed (hay and fodder). Crop residues such as straw and the foliage of trees and shrubs fall within this broad definition.

Forage crops—This two-word term has a much narrower meaning and refers to any crop of vegetative plants, or plant parts, harvested before being fed to animals. Thus, forage crops include hay, dehy, haylage, silage, greenchop, or soilage, fodder and certain by-products including crop residues.

Pasture—Primarily refers to plant communities predominantly of introduced species, whether sown or volunteer, on which animals are grazed (Moore, 1970). A more restrictive definition is ". . . fenced area of domesticated forages, usually improved, on which animals are grazed."

Rangeland, is a term of American origin. It means land on which the native vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing use, and not dominated by trees.

Range is a word difficult to define precisely since it has evolved into a collective word with broad definitions, such as "The region throughout which a plant or animal naturally lives." Range, in this context, encompasses all rangelands and forest range, that is, those forest lands that support an understory of herbaceous or shrubby vegetation that provides native forage for grazing and browsing animals.

Thus, grassland agriculture, in the broad sense, constitutes the largest land-use practice in the world, covering more than half the total land surface of the earth. Grasslands also remain as one of the largest undeveloped resources for increased agricultural productivity in the world today.

The basic natural resources associated with the production of forages include land, climate, water and energy. Sound husbandry of these natural resources will be required if increased grassland productivity is to be attained, while maintaining a quality environment. As Dr. Gerald Thomas will emphasize in his plenary paper, the increasing population, changing attitudes of people, and increased levels of affluence are having a decided influence upon the development and use of the earth's resources.

During this Congress, many speakers will identify a multitude of problems concerning the development, production, and use of the grassland resources of the world. Among the major constraints facing the world today are the following:

1. shortage of fossil fuel energy,
2. scarcity of water and deteriorating water quality,
3. soil losses,
4. insufficient knowledge and technology reserve,
5. failure to apply existing technology, and
6. increasing competitive uses for resources.

I suggest that we look upon these constraints not as problems, but rather as opportunities. I trust that each of you will strive to define these opportunities clearly and establish the research, extension, and educational programs needed to effect major improvements in our grassland resources. Increasing pressures for goods and services to meet the needs of society require that these resources be given full attention. Our grasslands must be improved and maintained in an ecologically and economically sound manner in order to meet national and international needs for food, fiber, environmental quality, wildlife and outdoor recreation.

An array of scientific disciplines is required to tap the tremendous potential that exists for increasing agricultural productivity through judicious use of grassland resources. Moreover, a sound national grassland philosophy is required by any nation before an efficient grassland agricultural program can be developed. We all have an opportunity and responsibility, whether we are scientists, technicians, administrators, farmers, ranchers or consumers, to influence our nation's grassland philosophy and, in turn, the establishment of a sound agricultural policy that allows the effective development and use of those grassland resources. The importance of establishing strong local and national grassland organizations, as a means of providing leadership for such efforts, cannot be overemphasized. I have experienced the importance and impact that the American Forage and Grassland Council and the Society for Range Management have had in the U.S. Representatives from many such forage, grassland, and rangeland organizations from throughout the world are present here today. Many of you have experienced

Presidential Address presented at the Opening Ceremony, XIV International Grassland Congress, Lexington, Kentucky, June 15, 1981, by Robert F. Barnes, Associate Regional Administrator, USDA, SEA-AR, Southern Region New Orleans, Louisiana. This reprint has the approval of Westview Press, Boulder, Colorado, publisher of the Congress Proceedings (to be available in Spring 1982).

Editor's Note: Several SRM members attending the Lexington meeting remarked this would be a good talk to publish in *Rangelands* so all members could read it.

the impact of your organizations in your own countries. We salute you and commend your efforts.

I would now like to address briefly an issue which developed at the Final Business Meeting of the XI International Grassland Congress, held in Australia in 1970. It was noted that the arid and semiarid areas of the world's land masses were ". . . receiving increasing pressure to produce forage for livestock and wildlife, water for downstream needs, and services for man's enjoyment. Research efforts into problems of arid and semiarid lands are rapidly increasing, and a worldwide need exists to communicate the results of this research and a practical management." It was recommended that ". . . future Grassland Congresses contain contributed papers, discussions, and plenary sessions concerning this important area of the world's grasslands."

Parenthetically, I would like to note that a conscientious effort has been made to develop a program for the XIVth Congress that will encompass the needs of the full continuum of the arid, semiarid, subhumid and humid areas of the world, as well as of the temperate, subtropical, and tropical regions. It remains for you to determine and history to document whether this goal is achieved. In 1978 the first International Rangeland Congress was convened in Denver, Colorado, U.S.A., due, at least in part, to the failure of the International Grassland Congress to encompass the full complexity and diversity of the grassland agricultural systems, particularly arid and semiarid rangelands.

A Committee for the Continuation of the International Rangeland Congress (IRC) has been actively involved in identifying a host for the Second IRC. A report concerning the status of these activities will be made during the business meeting of this XIV Congress.

I am personnaly supportive of the concept of two congresses, provided their programs are complementary and their meetings are held on alternating years. Also, it is highly desirable that a close liaison be maintained between the two Continuing Committees. I will be serving on both committees for the next three to four years and thus hope to be able to aid in that continuity. However, I strongly recommend that the two committees specifically provide for a formal liaison on a continuing basis.

I would also like to speak to the question of the founding of an international grassland organization. A resolution was passed by the XII International Grassland Congress, meeting in Moscow, USSR in 1973, recommending that the Continuing Committee study the question of the advisability of founding an international grassland organization and to report the results to the XIII International Grassland Congress. At the XIII Congress in Leipzig, GDR, in 1977, the Resolution was addressed superficially at the final business meeting by concluding that "There were many considerations and aspects which were not in favor of setting up such an organization for the time being. The Continuing Committee, however, recommended that grassland organizations should be established at national levels."

I personally have a dream that I would like to share with you. I envision the establishment of a coordinating body for the Grassland Congress and Rangeland Congress. Perhaps it might best be called the International Grazing Lands Organization, or the International Forage Pasture and Range Organization.

I realize the complexities, difficulties, and obstacles to be overcome in the establishment of such an organization. My wish and my prayer are that there are enough like-minded individuals gathered here today who may cause it to happen. It may not come to pass for another decade—but if it is to succeed, it must be started at the earliest possible date. I look forward to hearing your reaction to such a proposal. For it is only as we work together for good that we can truly serve mankind.

I am confident that the interchange of experience and knowledge of those attending this Congress will result in tremendous benefits to this and future generations.

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Anatolian Shepherd Dog: an Ancient Breed

Marilyn Harned

"A gaze fixed on me, it was like a physical blow. Where . . .? A big dog, right in the middle of the flock was slowly uncurling. Dusty dog and dusty sheep. I had not noticed while all were asleep. His patchy, tawny and white body had blended perfectly in the dappled shade, slightly darker muzzle made him look menacing now, as did his stance. He rose slowly and gingerly, started stepping over the backs of his unconcerned charges, tail coming up, back ramrod straight. A wave of admiration hit me. There was a functional beauty chiseled to perfection by countless generations of work . . . I had been instantly cured of all desire to approach sheep in that land. I had met the GUARDIAN!"[1]

The graduate geologist from Cambridge University on expedition in the Middle East who wrote the above encounter experienced a meeting with a living relic from the days of the ancient Sumerian Kings. She had come face to face with a breed of dog that has survived and thrived out on the rugged Anatolian Plateau of Turkey and Asia Minor for over 6,000 years. She had met the Coban Köpegi or in English: ANATOLIAN SHEPHERD DOG.

The Anatolian shepherd dog, and impressive breed native to Turkey, has for centuries been the shepherd's front-line defense of his flock from predators and has only recently been introduced into the Western World. Historically, since Babylonian times, there was a breed of large, strong dogs with a heavy head. They were employed as war dogs and for hunting big game such as lions and horses. Some spectacular examples of the breed can be seen on the well-preserved bas reliefs in the Assyrian Rooms of the British Museum in London.

As a child growing up in Santa Ana, California, Marilyn Harned never owned a dog. In fact, it wasn't until 1974 that she acquired her first dog, a 7-month Anatolian shepherd dog named "Sandy." Since that time, Marilyn and her husband Quinn, secretary of the Anatolian Shepherd Dog Club of America, have acquired four more Anatolians which reside with them in Alpine, California. Marilyn and Quinn Harned have become patrons of the Livestock Guarding Dog Project at Hampshire College, and last summer they co-sponsored Dr. Raymond Coppinger, director of the project, to go to Turkey to research the breed and acquire new breeding stock. During her 7-year association with the breed, Marilyn has accumulated an extensive library of information on the Anatolian shepherd here in America. She maintains the Registry for the Anatolian shepherd dog in the U.S., and has traveled extensively throughout the U.S. and England recording the progress of the Breed.

Editor's Note: This is another guard dog story in response to the wishes of several in the Reader Survey conducted in 1980.

[1]Czartoryska, Natalka, "Five Minutes in the Life of a Geologist," The Guardian, Fall 1980.

Anatolian Shepherd Dog

The Anatolian shepherd dog is a truly magnificent animal to behold. The classic coloring of this breed, with black ears and muzzle, is often called "Karabash," or literally, "black head." Other color variants may include buff or white (Akbash—"white head"), tricolor, or even an occasional black. The Anatolian shepherd is imposing both in size and stature, with dogs standing at least 29 inches at the shoulder and weighing at least 100 pounds at full maturity. Its profile is accentuated by the tail which tends to curl over the back when the dog is on full alert. The dogs can have a lion-like impression heightened by the erect ear stubs after cropping, a common practice in Turkey. There is a decidedly slinky, lion-like grace about these dogs as they are seen at work. In their native land, Turkish shepherds may put huge iron-spiked collars on their dogs as added protection when the dog is out guarding the flocks against wolves, jackals, and bears. The awesome appearance of these dogs often strikes fear in the hearts of native Turks, who know only too well the still primitive nature of this Breed.

The present form of the Anatolian shepherd dog has evolved over the ages to suit a specific set of circumstances. The most formative of these circumstances include the climate, the lifestyle of the shepherds, and the job assigned to the dogs. These three factors have combined to produce a breed which possesses a loyalty, independence, and hardiness which is just now becoming appreciated in agricultural circles.

The climate of the Central Anatolian Plateau of Turkey is continental. The average elevation is 3,000 feet above sea level, valleys surrounded by mountains 5,000 to 10,000 feet high. The summers are extremely hot and very dry, temperatures reaching as high as 120°; in winter there is prolonged snow with temperatures plunging to as low as -60°. The dogs stay out all the time—whatever the weather may be. The shepherd dog is considered to be something lower than a pig

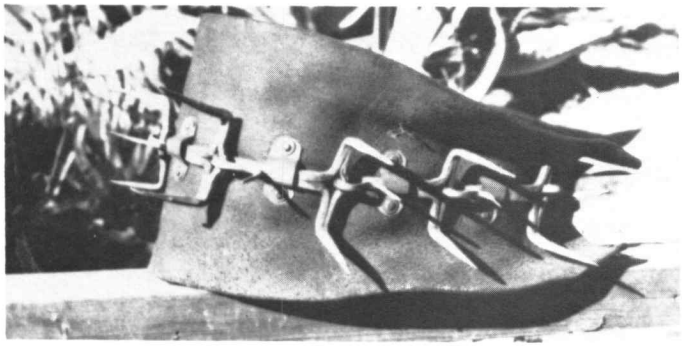


Photo: Robert C. Ballard

Turkish Spiked Collar worn as added protection against predators.

and, as Dr. Edmond S. Bordeaux, famous writer and philosopher, wrote in his treatise entitled *Messengers from Ancient Civilizations:* "They are totally without glamour, for to survive in the harsh wilderness of the arid and rugged mountains of Anatolia, a dog must be a perfect and functional tool of nature."[2]

Turkish sheep bunch naturally and have little, if any, inclination to scatter. The dogs do not herd the sheep, but patrol around them, often seeking higher ground to get a better view, and a breeze. The sheep tend to follow the shepherd, and if he moves off, one or more lines form, with the last sheep striving to overtake some of its fellows. The dogs patrol the ground ahead, checking out every bush and irregularity of the terrain for potential trouble. "The pups are ruthlessly culled by the shepherds and by nature, and those who survive are lean and muscular, able and ready to attack any creature—even present-day automobiles—which appears to threaten their sheep."[3]

To own an Anatolian shepherd dog is a great responsibility, for one is dealing with a primitive breed that has rarely experienced affection and gentle play. While the Anatolian does have a sensitive nature, and a verbal reprimand from its master is far more effective than physical punishment for incorrect behavior, "it is too much to expect that after centuries of deadly serious work, lives of terrible hardship spent in constant struggle for existence of themselves and their sheep, when a second of inattention could mean death, that in one short generation they should run with tails wagging to greet a stranger, no matter how well-intentioned . . . ."[4]

In light of this harsh existence, the Anatolian shepherd dog possesses both strength and agility, combined with a self-sufficient temperament, to produce a vigorous outdoor working dog which can, indeed, withstand such extremes of terrain, climate and lifestyle.

The first known Anatolian shepherd dogs to enter the United States arrived in the 1950's, imported by Dr. Rodney Young of the University of Pennsylvania, who directed the excavations at Gordium, of King Midas legend. However, the first active breeding program in the United States was the result of the importation of a pair of dogs by Lt. Robert C. Ballard, U.S.N., and his family upon returning to the United States from duty in Ankara, Turkey. Writes Lt. Ballard:

> A few months before moving my family to Turkey, my wife and I met several couples and individuals that had resided in, or had traveled in Turkey. Amongst the myriad of details and advice was the recurring mention of impressive shepherd dogs. Having little interest in dogs at the time, the comments went largely disregarded until later when we discovered the breed firsthand. We drove from Naples, Italy to Ankara, Turkey in a large, four-wheel drive vehicle and saw examples of the breed within a week after our arrival. We recognized them as the dogs our acquaintances had told us we would see. During the second month of our two-year residence in Ankara, our car was forcibly entered and emptied of miscellaneous tools and equipment. As a result, plans were made to ensure better security for car, yard, and dwelling. After a bit of research and comparison, it became increasingly obvious that the best qualified candidate for combination family dog/watchdog choice would be one of the locally famed shepherd dogs. Another month was spent searching for a good specimen puppy. Our choice was a six-week old male from a village where once stood the ancient city of Gordium.[5]

The Ballards named the puppy Zorba. Lt. Ballard and his wife, Dorothy, took their new puppy back to Ankara, where they raised him in a civilized environment—much different from the environment of his semiwild parents who lived in the fiercely rugged countryside surrounding the village of Karipanar. The Ballards became quickly aware of the special nature of this Old World breed—fierce protectiveness, perceptive character, and love for family. Lt. Ballard became fluent in the Turkish language and spent many weekends and vacations traveling throughout the country learning the customs of the Turkish people, but more importantly, learning the history and behavior of this magnificent Turkish breed of dog.

Before returning to the United States in 1968, the Ballards chose Zorba a mate, a young Anatolian shepherd bitch named Peki. Zorba and Peki's first litter was whelped on August 16, 1970, in El Cajon, California. The year 1970 also saw the importation of a second breeding pair, as well as the founding of the national breed club, the Anatolian Shepherd Dog Club of America. There are currently over 300 Anatolian shepherds registered in the United States scattered over 26 states.

The Anatolian shepherd dog is just now beginning to receive proper recognition for its potential as a badly needed livestock guarding dog for U.S. agriculture. The breed is actively participating in a nationally known research project, the Livestock Guarding Dog Project at Hampshire College, Amherst, Massachusetts. Dr. Raymond Coppinger, Director of that project, is studying the Anatolian shepherd dog, together with the Italian Maremma and the Yugoslavian Shar

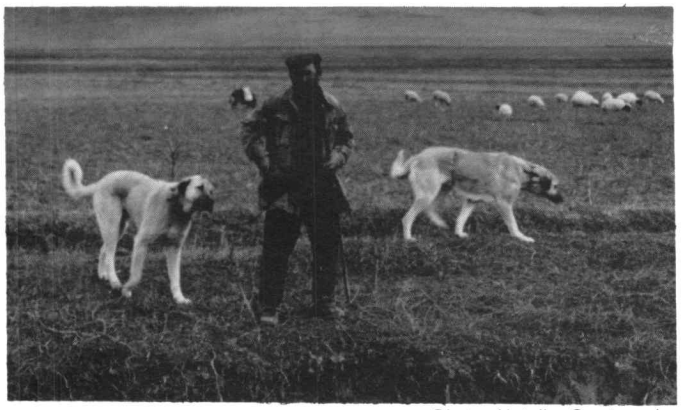
[2]Bordeaux, Edmond S. and Norma Nillson Bordeaux, "The Asia Minor Anatolian Heritage," Messengers from Ancient Civilizations, Academy Books, San Diego, California, 1974, p. 24.

[3]*ibid*

[4]*ibid.*

[5]Harned, Marilyn and Robert C. Ballard, "What the Heck is an Anatolian Shepherd Dog?", The Guardian, Fall 1980.

Anatolian shepherd guarding her flock in New England.



Anatolian shepherd dogs in Turkey. Photo: Natalka Czartoryska

Planinac in hopes that these breeds will prove to be a viable solution to the predation problem on federal grazing lands here in the United States.

In 1972, the Federal Government banned the use of poisons on federal lands, and a November 1979 directive from Secretary of the Interior Cecil D. Andrus stated that "official policy for federal grazing lands would now emphasize nonlethal, noncapture methods of control, that only the animal actually doing the damage would be removed, and then only by humane methods."[6]

As a result of that directive, livestock guarding dogs became an important issue and topic of conversation among sheep producers. While research with the Old World breeds still continues, we are hopeful and encouraged that breeds such as our Anatolian shepherd dog just may provide an inexpensive, realistic, and environmentally sound solution to the predator problem which is plaguing the sheep ranchers of this country.

To see an Anatolian shepherd dog and to live and work side by side with it and to study its behavior is to enjoy a piece of ancient history, carved and hewn to perfection and still possessing courage, sensitivity and intellect, "a remnant of the dim past when the dog first threw in his lot with man against the other wild beasts for reasons unknown."[7] This is the Anatolian shepherd dog—an ancient breed—alive and well in a civilized society.

For additional information on the breed, contact: Anatolian Shepherd Dog Club of America, P.O. Box 1271, Alpine, California 92001, (714) 445-3334.

[6]Coppinger, Raymond and Lorna, "So Firm a Friendship," Natural History, March 1980, p. 18.

[7]Bordeaux, *op. cit.*, p. 27.

Application Invited for Position of Executive Secretary of Society for Range Management

The Executive Secretary shall serve as the Chief Administrative Officer of the Society for Range Management; is accountable to the Board of Directors and is under the immediate supervision of the President.

DATE JOB TO BE FILLED:

August 1, 1982 or as soon thereafter as selected candidate is available.

SALARY:

Commensurate with experience and qualifications.

QUALIFICATIONS:

Demonstrated ability in public relations and communication, both internal and external to the SRM.

Demonstrated ability in organization management and administration.

Desire and ability to serve SRM members and Sections on an international basis.

Education and/or experience in range management or the renewable resource sciences that are basic to range management.

Effectiveness in working with volunteer organizations.

SPECIFIC DUTIES:

The Executive Secretary shall supervise the Society's office and its employees and be responsible for (1) all files and financial records of the Society, the expenditure of funds, the receipt and deposit of money, the management of investments and the audit of records; (2) the keeping of records of membership (5500 or more members), dues payments. Section affiliation, mailing lists, dues notices and correlation of records with those of the Sections; (3) service to Board of Directors, Society committees and to Sections; (4) issuing ballots for election of officers; (5) serving as managing editor of the *Journal of Range Management* and *Rangelands* and special publications; (6) seeking and originating opportunities to represent the Society and to project its image; (7) assisting the educational and informational programs and projects of the Society; (8) responding to inquiries and personal contacts regarding the Society and attending selected meetings; (9) assisting and participating actively in membership recruitment; and (10) coordinating activities associated with Society meetings.

EQUAL OPPORTUNITY EMPLOYER:

Applicants will be considered without discrimination for reasons such as age, race, religion, sex or national origin.

APPLICATIONS:

Applications will be evaluated beginning June 15, 1982. Applications will be receivable until the position is filled. Candidates should send a resume, three or more references and a letter of application to the chairman of the Search Committee:

Dr. S. Clark Martin
4402 East Sixth Street
Tucson, Arizona 85711

Living with Bitterweed

Fred C. Stumberg

Ford Oglesby, a rancher and mohair buyer in West-Central Texas near San Angelo, has learned to live with the problems of raising sheep in Bitterweed Territory. This area of Texas, known as the Edwards Plateau land resource area, experiences some sheep death loss each year from grazing bitterweed *(Hymenoxys odorata)* late in the winter when there is little other green forage. A carefully managed grazing program helps his sheep survive when many other ranchers have severe poisoning difficulty.

Bitterweed poisoning is not something that has developed recently. A little study of ranch history shows it has been a problem for a long time.

As early as 1904, Oglesby's grandfather had ranches along the Pecos River about 60 miles from the 16,000 acre ranch that Oglesby operates now near the town of Eldorado south of San Angelo.

"Only cattle were run year-round on the home place," explained Oglesby. "Sheep were run on the Pecos River ranches through the fall and winter. In the spring they were gathered up and herded to the home ranch. Here they were sheared, marked, culled, and the lambs driven to a railroad siding 20 miles to the north for shipping. The main sheep herd stayed at the home ranch for the summer and then were driven back to the Pecos River in the fall."

"In about 1926, sheep were wintered on this ranch for the first time. That's when trouble with bitterweed really started. The weed was here all along, but it wasn't a problem because the sheep were gone when poisoning usually occurs."

In about 1936, Oglesby's father came up with the idea of concentrating sheep in a bitterweed-free pasture during the winter to avoid poisoning.

"My father found that if he could keep the sheep off the weed while it was young and tender, they wouldn't graze it hard enough in the spring when it was stemmy and rank to cause poisoning problems," Oglesby continued. "Sheep prefer the tender young growth on weeds and normally won't eat the rank mature plant if they have a choice.

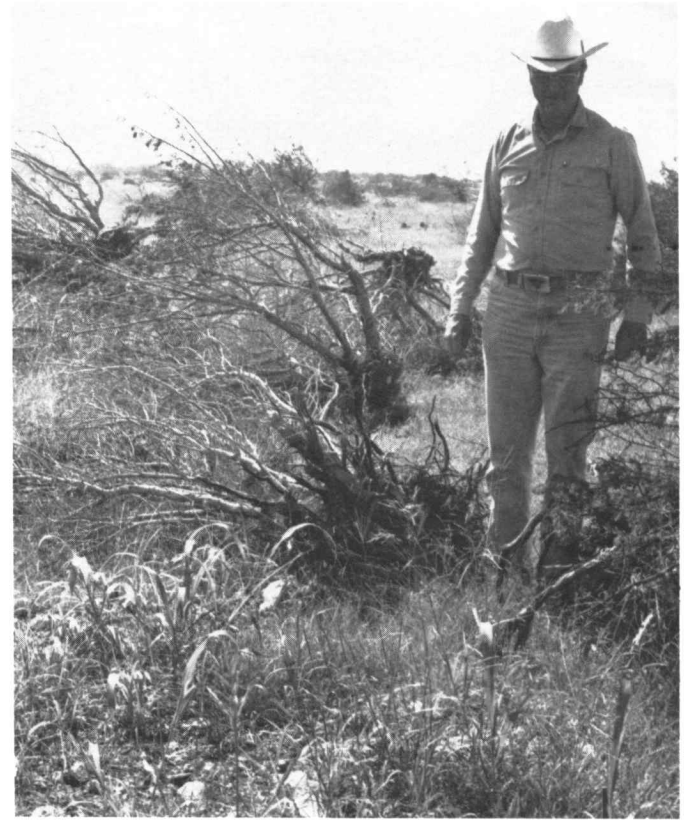
Oglesby, a cooperator with the Eldorado-Divide Soil and Water Conservation District, watches his sheep carefully in the early fall. If good rains occur after September 15, chances are good that bitterweed growth will be heavy.

"Sheep have a pretty high tolerance for bitterweed toxicity and it takes a while for them to develop poisoning symptoms," Oglesby said. "When my sheep show the first sign of sickness, we slowly drift the individual herds to the 'clean' pasture."

After the sheep have had several days to settle down in their new pasture, Oglesby starts warming them up on high protein feed. He gradually builds them up to 3/4 pound of 41 percent protein feed per day. To balance the needs of the sheep during the dry winter, he begins feeding corn for energy in addition to the protein feed.

"I gradually build up the feed level to 3/4 pound of protein one day and then 3/4 pound of corn the next," Oglesby explained. "The clean pasture is rested as much as possible during the growing season so there is plenty of dry grass available. The herd really has some good groceries while they are in this pasture."

Author is district conservationist, U.S. Department of Agriculture, Soil Conservation Service, P.O. Box 459, Eldorado, TX 76936.



Ford Oglesby examines a recent seeding following treedozing of redberry juniper on his operation near Eldorado in Southwest Texas. Dozing and seeding is a part of his overall ranch management.

In the early spring when sheep are moved out of the clean winter pasture, there are usually enough fresh young grass and desirable forbs to graze so that bitterweed is not much of a problem.

"Even during dry years, the sheep forage is a little fresher after it has been deferred for a while," Oglesby said. "I move my sheep herds from pasture to pasture occasionally to keep them grazing good, fresh feed as much as possible. This also improves the ground cover and gives noxious weeds less chance to spread.

"A grass growing plan is my biggest asset in working around the bitterweed problem," he stressed. "I work toward growing enough quality feed on the ground that I can offer livestock something better to eat when the time comes."

"We stock pretty light with cattle, sheep, and goats. The herds are moved around enough to provide each pasture a good rest when it really counts. To make up for light stocking, I pasture steers during the winter when there's enough feed on the ground. Each fall I evaluate how much grass the ranch grew and decide whether or not the land can support some steers for the winter. This gives me the flexibility I really need to run this ranch efficiently."

"My father taught me during the depression and again during the drought of the 1950s that ranch improvements which help manage grazing are a lot cheaper than buying hay," concluded Oglesby. "We've ranched with this in mind for the past 44 years."

African Grass Invades Coastal California

Calvin Wilvert

In comparing tropical grasses, those of African origin are generally superior as pasture species, often being more proteinaceous and drought-resistant than those native to other continents. When introduced to compatible habitats, the African species have typically largely displaced indigenous grasses, thereby improving carrying capacities. A half-dozen such species of grasses, representing several life zones, have been primarily associated with this "Africanization."[1]

One of these, kikuyugrass *(Pennisetum clandestinum)*, is native to the moist, fertile highlands of East Africa from 6500 to 9000 feet elevation. It has spread explosively under comparable environmental conditions, such as in Costa Rica's Central Highlands, Colombia's Sabana de Bogotá, and Ecuador's Quito basin. Kikuyugrass has also achieved major significance as an introduction to various low elevation subtropical settings, including the North Island of New Zealand and the coasts of California and eastern Australia. It is a most important range grass in Hawaii, especially in wetland areas, and is often underrated as a pasture species.

The invasiveness which has endeared kikuyugrass to cattlemen in so many countries has earned it curses from farmers, horticulturalists, and urban homeowners. Indeed, an entire chapter is devoted to it in *The World's Worst Weeds*.[2]

Apparently first introduced to California in the 1920's, kikuyugrass was planted for erosion control.[3] It was an ideal choice for this function, as it soon forms a thick, protective, stoloniferous mat; rhizomes interlace the soil. It was believed that early stands were seedless, spreading only by runners, but it was eventually realized that the grass is also a prolific seed producer. Casual inspection of the plant, in any season, finds no visible seed head. However, seed does form inside the leaf sheaths. In fact, the specific name "clandestine" refers to the inconspicuous nature of the spikelets. Kikuyugrass spreads so aggressively that most government agencies stopped planting it decades ago.

Today, one cannot buy kikuyugrass seed or plugs in a nursery, yet the grass is ubiquitous and steadily more conspicuous. The author's survey of agricultural reserach agents throughout California, as well as field observation, reveals kikuyugrass to be a major—sometimes sole—sward component in many immediate-coastal areas from the Mexican border to the northern fringes of San Francisco Bay. North of there, low temperatures are a constraint, as are high temperatures in the interior of the state. The grass flourishes along the foggy coast, its thick stolons spilling over the cliffs. A few miles inland, it thrives in irrigated turfs. The physical environment most conducive to kikuyu is along the southern part of the coast. In Santa Barbara, for instance, city officials estimate that kikuyugrass constitutes 90% of the park swards.

Kikuyugrass has long been viewed by California's farmers and horticulturalists as a rapacious nuisance, plaguing avocado orchards, citrus groves, vineyards, and golf courses. Golfers blame the uneven surface of thatched kikuyugrass for poor swings and directional changes of rolling balls. Dislocated wrists have even been attributed to clubs becoming entangled by the ropy stolons. The grass has probably been an even greater challenge to the homeowner, because the cord-like runners of infrequently mowed kikuyugrass can cause powerful mowers to choke or jump without cutting.

While kikuyugrass will probably always be considered a pest in ornamental plantings, as a lawn grass it is gaining some—albeit grudging—respectability. California landscapers are discovering that since the grass must be lived with (eradication from a heavily infested lawn is not a realistic option), it does have certain virtues. It requires less water and fertilizer and is more insect-free and trample-resistant than most turf varieties. The key to successful management appears to be frequent, very low mowings with a highly sharpened mower.[4] However, such cutting, while reducing stolon buildup, is said to stimulate flowering and seed production, thereby fostering further dispersal. Even if kikuyugrass never actually wins the affection of Californians, it is a conspicious reminder that the state's flora has been enriched by yet another immigrant.

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More Grass Means More Cattle

Dick Whetsell

The years 1980 and 1981 represent the poorest net profit for the cattle industry since 1933. And I wonder about 1982. We must improve our cost of production position and at the same time get more for our table product if we are to stay in business. The United States produced more table meat in 1981 than in 1980 but less of it was beef.

Our grass must be used more efficiently to keep costs down. At the same time our ranges must be improved and/or maintained for future use. The old systems won't do this. It appears the new intensive, short duration systems could have value.

Just ranching as usual is not going to cut it in the 1980's. Even producing 60 to 80 pounds of beef per acre on native grass will not let us survive on $400 an acre rangeland. The tremendous increase in all cost items, with little or no increase in beef prices, has backed us into a corner. The only way out is increased grass production, *grazed in a profitable manner.*

The pressure of increased costs, coupled with old methods of grazing, is the thing that is forcing many ranchers out of business. Long-time operators, men who know the business well and have done a good job, are now being forced into liquidation. Most of the ranches of any size sold in Osage County, Oklahoma, since 1970 have changed hands again, according to SCS Range Conservationist Sid Brantly.

To survive, new ideas and new methods must be incorporated into the ranching operation. Most ranches, as now operated, can not stand heavier stocking rates without further damaging the grass, resulting in lower carrying capacity.

But, if, the native grass rancher is to stay in business, he must grow more grass and graze more cattle on the ranch unit. This has to be done by some method other than what we now call "proper stocking."

Ranchers have reduced their grass harvesters, livestock, but many of the individual plants are still being damaged. To the individual plant being overgrazed, it makes no difference whether there is one cow or 100 in the pasture.

With conventional grazing methods a part of the range is being overused regardless of the stocking rate. It's time to change harvesting methods. Range researchers have been advocating rotation deferred grazing for many years because it usually improves range condition and boosts carrying capacities. However, even under this system many individual plants are still overgrazed, thus suffering a loss in vigor and production.

When cattle graze the same area for months (or even weeks) at a time, new plant growth is selected first because of its high palatability. As the new growth is continuously removed, the plant is robbed of its leaves, which supply food for the plant. Each time the plant begins to grow a new leaf, a grazing animal is nearby to immediately nip off this fresh growth. As this process of growing and grazing is repeated throughout the growing season, the plant's root system is literally starved and a part of it will die.

A grazing program must be designed that will allow the grass to make use of its new growth to first feed itself—and then harvest it. To accomplish this in Oklahoma, a rotation system could be set up involving one herd and 3–6 pastures. The livestock are moved every 8–10 days to a fresh pasture. This insures total uniform use and allows an individual plant to be grazed only one time in most cases, and then it has 25–30 days to recover before being grazing again. This encourages maximum forage production.

Continuous grazing may no longer be an economical method of producing beef. We've postponed the shift to more intensive grass management, but now it's time to act. We have to produce more pounds of beef per acre in order to stay competitive at the meat counter. Most Oklahoma ranches could begin this kind of management system just the way they are—without expensive fencing.

We have designed a system for our 40,000 acre Foraker ranch that requires no structural changes. It's really very simple. We are putting more cattle in a pasture for a shorter time. There are 21 pastures, rotated with six herds. Depending on the amount of forage and size of each pasture, the steers will graze 7–10 days and be moved to an adjacent pasture. The grass will then have 3–4 weeks of complete rest before being grazing again. One important thing to remember is to move the cattle on time.

The native ranges in Oklahoma are chiefly covered with warm-season grasses, so an intensive rotation system will not be so effective during the winter months. During the dormant season cattle will winter better scattered over all the ranch. Considering today's high interest rates and the high cost of protein, it may no longer be profitable to *winter steers on bluestem ranges.*

Another benefit of this new system is that it provides a close check on all cattle at regular intervals. It is easier to prowl one pasture of 300 cattle than three pastures of 100 cattle.

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Yearling steers on the Oklahoma Land and Cattle Co. Ranch.

As for the extra time required for moving cattle, I'd rather have my cowboys moving cattle to improve the range and increase beef production, than have them busy doing something that makes no contribution to production.

Moving has to be done correctly because cattle that are stressed by frequent moves will not gain efficiently. There are many ways of doing this that are common knowledge among good hands. Gates left open at the proper times, double gates for large herds, wing fences and feed trucks can all be handy. The cattle should be moved quietly and scattered in the new pasture for best results.

When adequate grass is available, continuous stocking usually gives best gains per head. However, with the increased numbers under this system you can produce 50 percent more beef per acre, improve the range, and get total uniform use of all forage.

A rancher grows only one crop and that is grass. He has to know that he must first increase his grass production before he can run more cattle.

The grass growing principles talked about in this article can help guarantee a profitable future for Oklahoma cattlemen and concurrently improve and stabilize our rangelands.

Editor's Comments About the Author: Dick Whetsell knows whereof he speaks. He is a long-time rancher and SRM member. At the Tulsa SRM annual meeting in 1981 he was awarded the prestigious Frederic G. Renner Award. The certificate read: "In recognition for his outstanding application of good range management for livestock production, private recreation, and improved wildlife habitat and for untiring efforts over many years in working with organizations, ranchers, and students in promoting better range management."

Has Range Improvement Kept Up With Cattle Improvement?

Half a Century of Change

Larry Foster

Has the long-time trend of livestock reductions on rangelands been due to range deterioration or beef cattle improvement? This trend is apparent in Figure 1. The data for this chart came from the U.S. Forest Service and are a total of cattle plus sheep (5:1) on a cattle equivalent basis grazing in New Mexico. Whenever cow size is increased substantially, the amount of feed necessary for maintaining weight will also go up. Feed requirements will also increase as the percent calf crop and calf weights increase. When this is all added up, has the total amount of feed required increased enough to affect carrying capacity?

In order to calculate this, definite statistical information is needed on what actually existed 50 years ago. This information exists in the bulletin published by Walker and Lantow in 1927. Using their basic data as a baseline, we compared it to present data from the New Mexico State University experimental herd located near Las Cruces, New Mexico. For the comparison, two basic assumptions were made: range condition has not changed (during the past 50 years) and the relative dry matter intake of cattle has not changed.

Walker and Lantow (1927) based their bulletin on a detailed survey of 127 ranches in southern and eastern New Mexico in 1925. The average size of those ranches surveyed was 61 sections per ranch. There were 754 cows, 34 bulls, 433 calves born (57%), and 361 calves branded (48%). A 12% death loss was incurred with 78% of the deaths attributed to starvation. The average cow weight was 777 lb and calf weaning weight was 323 lb. An average of 155 lb of calf was weaned per cow.

The Walker and Lantow data were used to compare to cows from the NMSU College Range breeding project (Rankin et al. 1978). The two sets of NMSU cows were Herefords (1,000-lb cow, 63.4% calf crop 411 lb weaning weight) and Brangus-Hereford crossbred cows (1,100-lb cow, 85% CC, 495 lb WW).

Dry matter intake calculations were based on metabolic weight ($WT^{.75}$) basis using the same constants for each stage of production. The stage of production, calf crop percentage and weaning weight of the calf were all included in the calculations. The calculated intakes were compared to actual values as published by Cordova et al. 1978. These were also compared to National Research Council recommendations. No allowance was made for difference in digestibility of forage by season as trends were assumed to be the same in 1925 as in the present.

Size of the cow definitely affects the daily intake. Average yearlong daily intake calculates to be about 17.5 lb per day for the 777 pound cow and 26.6 lb per day for a 1,100-lb cow if each raised a calf. Calf crop percentage plays an important role in calculating total herd forage intake. Cows without a calf are considered to be maintaining their weight, which results in a lower intake. For example, a dry, 1,100-lb cow will eat about 18 lb as compared to 26 lb per day during early lactation. When the weighted averages of stage production, size of calf, and percent calf crop are calculated, the 777-lb cow consumed 15.2 lb of forage per day yearlong as compared to 19.6 lb for the 1,000-lb cow and 22.6 lb for the 1,100-lb crossbred cow.

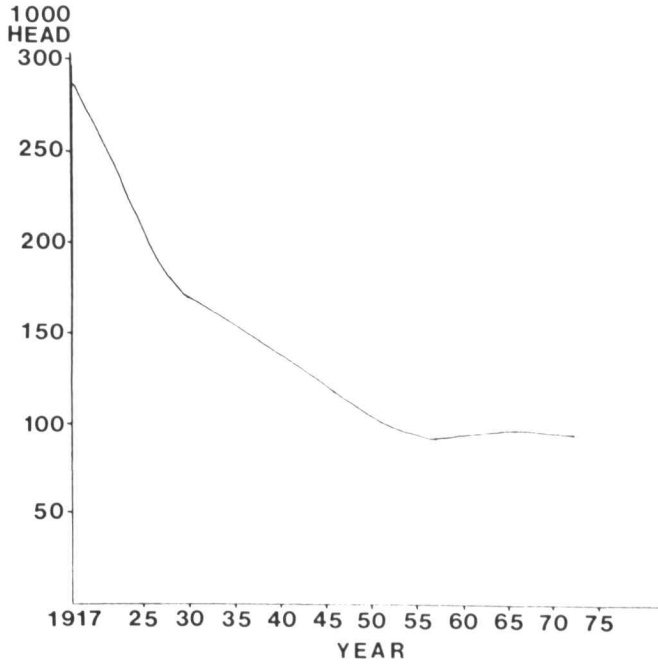

Fig. 1. *Cattle equivalent grazing on New Mexico's forests.*

Assuming a base herd of 800 cows with an average weight of 777 lb in 1925, they would eat 12,160 lb of dry matter per day. Now, with a herd of 1,100-lb crossbred cows eating 22.6 lb/day, only 538 cows would consume the same amount of forage and it would take only 620 cows weighing 1,000 pounds.

Let's look at this another way. Cows of 50 years ago produced 124,000 lb of beef where the crossbreds produced 226,363 lb of beef. This is done with only 67% as many cattle or a 33% herd reduction.

If we turned the screw one more turn and implanted the calves (not done on the NMSU cattle), we can expect a faster growth rate to achieve about 25 lb added per calf. This would give an additional 11,875 lb without affecting numbers. We would then have 238,238 lb of beef produced from 538

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crossbred cows, or about twice as much beef from 67% as many cows.

The decreasing number of livestock on the ranges is at least partially explained by the improvement of the livestock. Ranchers and land managers were realizing that in order to maintain range quality they had to continue to trim numbers. Undoubtedly this process was slow as the improvement in cattle is slow. If one could plot the annual forage yield removed from the range over time, there would still be a decline but not nearly as steep as the one shown in Figure 1. Also, a certain amount of improvement in the cattle came from changes in the range management area. The improved efficiency such as calf crop percentage and weaning weights would be directly affected by range condition up to a point after which increases are mainly genetic rather than environmental.

Thus, any change in cow size and production efficiency as great as the changes discussed in the article would have a pronounced effect on carrying capacity. Any rancher wanting to run the same number of cows as in 1925 should have a forage base of about 50% greater than the original. This could have been done by expanding the number of acres, or improving livestock distribution and range improvement practices.

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Editor's Note: The author didn't really intend to answer the question, "has range management kept up?" That would take a much longer and more complicated article. His intentions were to stimulate some thinking in this area as well as make a point that size and productivity of the animals in a herd do affect carrying capacity. We haven't paid much attention to this fact in the past in range management. We generally just consider a cow is a cow is a cow.

LU Land Projects—Preserving the Land and the People

Larry C. Eichhorn

Opportunities for Montana homesteaders were as bare as their cupboards in the early 1930's. Homesteaders had flocked to the state at the turn of the century, drawn by railroad propaganda and the allure of owning their own place. And, at first, nature seemed inclined to bless the enterprise—1909-1915 (when most lands were homesteaded in Montana) were years of good precipitation. Crops grew, confounding those who had declared that homestead lands were fit only for grazing. The prices of farm commodities rose as the warring nations of Europe sought to feed their citizens, and the small farms prospered.

But lean years followed the fat. There were a number of dry years when the wind stripped the thin topsoil of the plowed fields. Commodity prices after World War I fell even as the dust clouds rose. Homesteaders sank further and further into debt just to feed their families. Finally, many saw their farms go to the county for the taxes they had no way to pay.

Many Montana counties were left with two problems; first, to aid the displaced homesteaders and other unemployed workers; second, to get the idle homesteaded lands back into the use for which they were best suited. Some people were relocated to more productive lands and special project areas. A county agent in northern Montana during this period came up with a solution that solved both problems, though. Henry Lantz, Phillips County Agent, suggested that the Federal government buy up homesteaded farms that had gone under or were sinking and employ the erstwhile homesteaders and others on project work.

Lantz' suggestion was embodied in the Bankhead-Jones Tenant Act of July 22, 1937. Title III of this act authorized the Secretary of Agriculture to repurchase for the Federal government lands unsuited for cultivation. These "Land Utilization" lands were to be improved and put back into production as rangeland wherever possible. The act also authorized that 25% of the net revenue from LU lands be returned to the counties in which they lay to support roads or schools.

One objective of the Department of Agriculture's acquisition program was to provide work for the unemployed in the area. This was to be done by range treatment projects on LU lands. Funds were funneled through the Works Progress Administration for the projects, while the U.S. Soil Conservation Service supervised.

What kinds of range projects were undertaken and how efficient were they? A look at a project Dry Blood Creek on LU lands provides the answers to these questions.

Dry Blood Creek lies 10 miles north of Winnett in central Montana. In 1936, WPA began a flood control demonstration project on a tributary of this drainage. A catchment reservoir was built, providing information on the run-off characteristics of the watershed. Frequent floods down Dry Blood gouged a trench through the landscape. The catchment reservoir slowed the erosion but floods in March and June of 1937 damaged the spillway of the reservoir. Clearly, something else was needed to counter the corrosive floodwaters.

SCS decided to mechanically treat the drainage above the reservoir to reduce water velocity down the drainageway. Contour furrowing, the recommended treatment, impedes the flow of water across the soil surface, allowing more time for water to infiltrate, thus decreasing run-off and therefore erosion. The goal of contour furrowing is to hold as much water on the soil on which it falls as possible. This mechanical treatment was not new, even in 1937, having been employed in South Africa in 1876 (Bennett 1939) and in Texas in the 1880s.

The trick was to match the size of the furrows and their spacing to the soils and the climatic conditions of the site. Soils are predominantly loams and clay loams in the Dry Blood drainage basin. Slopes are from 5-20%. Precipitation averages 13 inches yearly. A Lister (a double moldboard plow) was used with either single or double blades cutting furrows 4 inches deep and 12 inches wide. The furrows were from 7-21 feet apart, depending on the contour and the percentage of the slope of the land. After treatment, the slopes were seeded with crested wheatgrass *(Agropyron desertorum).*

No water went over the spillway after the mechanical treatments; very little, in fact, even collected in the reservoir. The project proved that flooding could be at least partially controlled by contour furrowing the steeper slopes above the problem drainage, as Larson (1940) concluded. The efficiency of the Dry Blood flood control project in general is borne out by pictures of the area.

LU lands repurchased by the Federal Government ultimately reached 2.5 million acres, of which 1,934,000 acres are in Montana. Today, most of the LU lands are administered by the U.S. Bureau of Land Management for livestock grazing. These lands are intermingled with private, state, and public domain lands.

By converting marginal and submarginal farmlands into rangelands, LU land projects redirected the economy of the region while using the land and human resources to the highest capacity.

Four thousand men worked on the LU projects during its 5-year (1935-1939) history and then moved on. Like the land, they had been an under-utilized resource.

Author is with the Bureau of Land Management, Lewistown, Montana.

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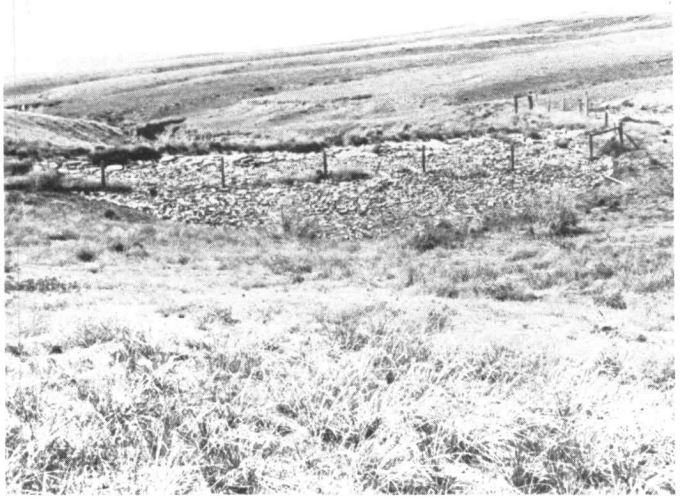
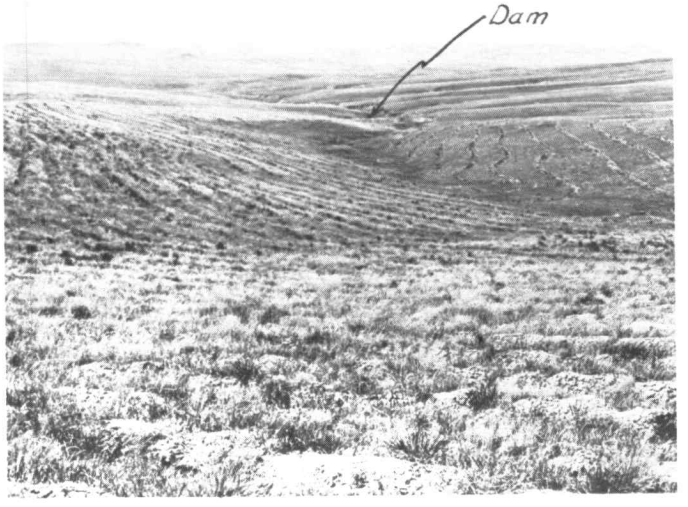


A reservoir constructed in 1936 provided information on run-off characteristics of the watershed. **1936**

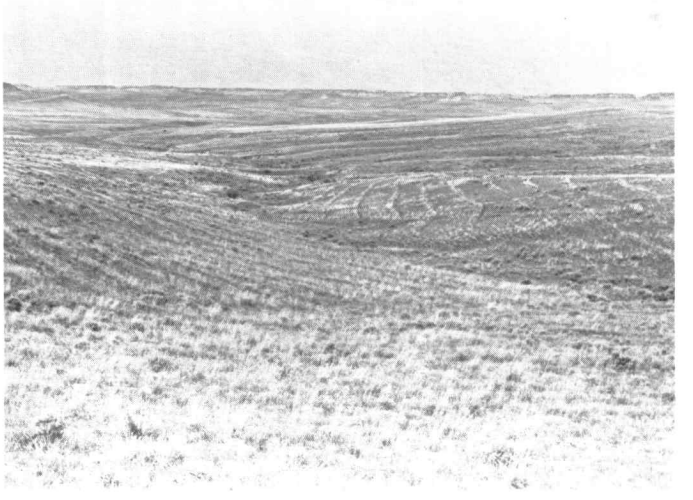
The reservoir today. **1981**

The drainage below the reservoir as it appeared in **1937**

The same area today. **1981**



The drainage basin after contour furrowing in **1937.**



The drainage basin today, 44 years after contour furrowing. **(1981).**

Dry Blood Reservoir, gully below reservoir and drainage basin before and after contour furrowing. The treatment significantly lessened erosion in this drainage. The furrows still have an average width of 12 inches and 2-4 inches in depth. Note that the gully is no longer sharply incised and the soil is stable enough to support shrubs and grass.

The most common plants on the sites are crested wheatgrass, western wheatgrass (Agropyron smithii), *plains muhly* (Muhlenbergia cuspidata), *green needlegrass* (Stipa viridula), *needleandthread* (S. comata), *Junegrass* (Koeleria cristata), *and big sagebrush* (Artemesia tridentata).

Enduring Examples of High Range Condition for Reference by Rangemen: with Thanks to the Ordways and The Nature Conservancy

E.J. Dyksterhuis, with much taken from an article by Jay Henrichs in *The Nature Conservancy News,* Vol. 31, No. 1, 1981.

When Miss Katharine Ordway died in June, 1979, she left a system of grassland preserves in five states that totaled 31,000 acres. Her gifts and pledges totaled over $42 million.

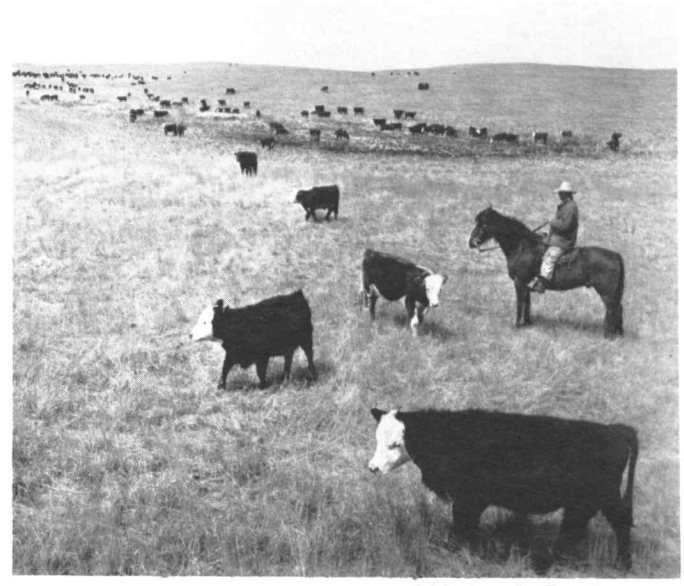
In 1959, she also had set up a charitable trust with John G. Ordway, Jr., her nephew, as one of the trustees. This is the Goodhill Foundation, in which he is active. The largest Goodhill project thus far, is the Niobrara Valley Preserve in northcentral Nebraska, where $11 million has been pledged to set aside 54,000 acres of Tallgrass Prairie, Mixed Prairie, and Sandhill rangeland. Here, too, are remnants of forest species from the western, northern, and eastern forests of the USA, isolated now in localized microenvironments along the breaks of the Niobrara, where they survived the shift to prairie climate during geologic time.

While on a tour of a proposed South Dakota preserve, originally promoted by Range Conservationist Tom Pozarnsky of the Soil Conservation Service, Miss Ordway asked a Conservancy staffman if there were not four species of sedge *(Carex)* on the upland. He gathered four specimens but she asked if two were not the same species and he was off again to find another.

Well informed in natural resource matters, she was partial to prairie tracts, tracts that had never been plowed and contained the native grasses and flowering forbs. Reared in Minnesota, in a prairie portion I presume, she graduated *cum laude* in land planning from the state university. She believed that our entire country might be altered by development and determined to save some examples of the original land. Through her attorney, Raymond A. Carter, she contributed anonymously to land conservation and other causes.

The proposed South Dakota tract was acquired by The Nature Conservancy with funds anonymously given by Miss Ordway; 7,600 acres in the northeastern part of the state, it was later named in honor of her cousin, who introduced her to the conservation cause. It is now known as The Samuel H. Ordway, Jr. Memorial Prairie.

About the author: Dr. Jerry Dyksterhuis spent a lifetime career in range management in the plains states with the Soil Conservation Service and Texas A&M University. Now, in retirement, it is his hobby. He served as the 21st president of the Society for Range Management in 1968.



SCS photo by Tom Pozarnsky

View of the Samuel H. Ordway, Jr. Memorial Prairie in the spring of 1963 after range had been rested throughout 1962 under careful management of then owner, Tom Boylan, on the horse. Boylan treasured a natural mulch of old growth for snowcatch and rainfall infiltration.

His 1953 book entitled *Resources and the American Dream,* 55 pages, Ronald Press, should not be overlooked by this readership. Of it, Paul B. Sears, ecologist of Yale University, wrote, "I think Ordway has gone right to the heart of a problem which is basic to modern civilization"; and, Stanley A. Cain, School of Natural Resources, University of Michigan, wrote, "The questions Ordway raises, and the conclusions he reaches, should be pondered by thinking people everywhere." Rangemen will be pleased to know that this example of True Prairie rangeland in the 15-19″ Precipitation Zone, with vegetation in the Excellent Range Condition Class on several types of sites, is named for this man.

Finally, as her attorney has said, it is good that Miss Ordway and The Nature Conservancy found each other. She wished to donate money for land preservation and The Nature Conservancy was seeking donations of natural areas and needed money to buy unspoiled land.

Rapid Rotation Grazing Programs in Texas

Robert E. Steger

Grazing programs have been researched and recommendations applied by Texas ranchers with good results. Recent developments in grazing programs have caused much discussion of merits and possible pitfalls in these programs. These grazing programs are usually grouped into two basic types, which are Deferred Rotation Grazing and Short Duration Grazing. The major differences of these systems are the ratio of area grazed to area rested and the length of graze to rest. Under deferred rotation systems one-half or more of the total land in the system is being grazed at any given time and the time a pasture is grazed equals or exceeds the period of rest. My topic on rapid rotation is within the definition of Short Duration Grazing, where animals are concentrated on less than one-half of the total land area and length of deferment periods exceeds the length of grazing periods. Various other names have been assigned to this form of grazing program, including the High Intensity-Low Frequency System which utilizes longer cycles and the Savory Grazing Method of shorter cycles (*Rangelands,* Vol. 2, No. 6, p. 234).

The major difference in the Short Duration Grazing system and the Savory Grazing Method is the application of grazing principles, with the latter providing daily planning and flexibility to obtain animal performance through three dimensions—time, number, and area. The Savory Grazing Method utilizes grazing periods of 1 to 10 days with 30- to 60-day rest periods, depending on numbers of paddocks, the rate of plant growth, and the productive phase of the grazing animal.

It is implicit in the above definition that the grazing animals must be concentrated into a relatively large herd or herds with Short Duration Grazing. Increased animal stress, higher risks, and more management input should be anticipated. The grazing planning with Savory Grazing Method is designed to avoid this stress.

Why Intensive Grazing?

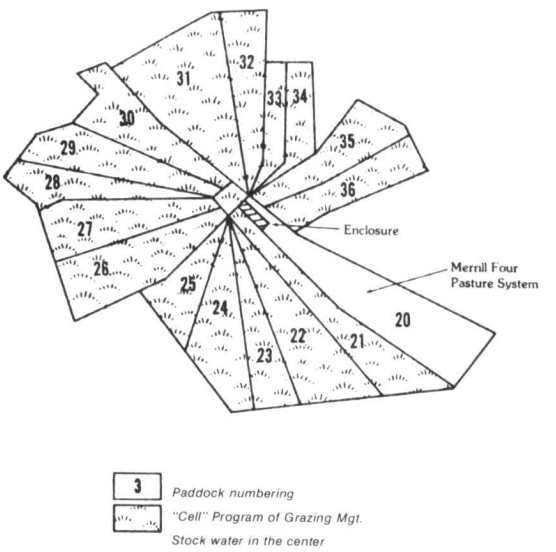
Before we attack the topic of how to get the most out of rapid rotation grazing we should probably first look at why we would want to increase animal stress, risk, and management. Indications are that we usually must increase numbers of animals to a point where net returns are above our fixed and variable costs and into the profit margin area. Therefore, we are seeking a grazing program based on maximizing forage utilization without significantly increasing fixed base costs while maintaining our forage resource.

Short Duration Grazing has been researched in Texas and has consistently shown a favorable vegetation response when compared to any other grazing program. Increased perennial plant growth, better average forage quality, and a greater production of roots were determined by these Texas studies. Improved plant vigor, greater seed production and seedling establishment have been reported. Less range deterioration has been reported when using this program during drought periods.

Unequal sized pastures do not complicate Short Duration Grazing methods. The need to consider season of rest in the grazing planning is eliminated since all seasons are automatically included in the program.

Research has shown that more animals may be run under this Short Duration Grazing than with continuous or Deferred Rotation Grazing. Production per animal, however, is usually lower under Short Duration Grazing. When non-

Angelo State University Cell Program



The author is associate professor of animal science, Angelo State University, San Angelo, Texas.

Editor's Note: The author and Allan Savory want to stress the importance of terminology used in Savory Grazing Methods. The words *cells* and *paddocks* are unique in Savory and similar grazing systems. Savory says, "The word *pasture* as used in the United States is not definitive enough. The word *paddock* means only a subdivision of land within a cell, whereas *pasture* as used in America, refers to a division of land, a planted grass pasture, and a grass on the range—all of which are totally distinct things."

lactating animals are used, either steers or heifers, animal production per head has been favored under Short Duration Grazing. Also, with heifers, one study has shown a doubling of returns in pounds of beef per acre when stocking was doubled under Short Duration Grazing.

The relatively lower production per head may not be all bad as shown in one Texas Agricultural Experiment Station study. The kind of grazing system affected animal production for some time. Calves from Short Duration Grazing gained better in the feedlot than calves from continuous or deferred rotation systems. The researcher indicated that the higher concentrations of animals under Short Duration Grazing better adapted the animals to the concentration under feedlot conditions. These gains were a result of cattle adaptability to conditions.

Discovery of the Wheel

A more recent innovation used with the Savory Grazing method has been the introduction of the Cell or Wagon Wheel design of pastures. The cell is strictly an administrative tool for livestock manipulation.

The cell design has livestock waterings, self-feeders, and working facilities in the center. The fences radiate out from the center similar to spokes in a wagon wheel. The cell design and short grazing periods does not in itself make the grazing program a Savory Grazing Method. The cell configuration is most often used in this method; however, the Savory Grazing Method may allow for 100% increase in animal numbers over continuous grazing. However, under this latter program a series of periodic checks to determine correct stocking are provided for in the planning and execution of the method. Under Short Duration Grazing the experience of the operator governs the success of the program. Numerous land managers are attempting to use a cell design with Short Duration Grazing practices which may be successful if the experience level of the operator is adequate.

When results from Short Duration Grazing are evaluated, one needs to determine if the cell design was used or if Short Duration Grazing principles were applied to a series of pastures, each containing individual waterings.

The Savory Grazing Method

Little research information is currently available on the Savory Grazing Method in Texas. This program has been studied at Angelo State University since May, 1979, and is the only one being researched in the United States under the supervision of Mr. Allan Savory. This grazing scheme was installed on 1,400 acres. The initial program included 6 pastures that have been subdivided into 16 paddocks. For comparison purposes a 175-acre pasture is treated as a Merrill Four-Pasture System would be treated under deferred rotation grazing, allowing animals to graze the area for 12 months followed by a 4-month deferment. In addition, an ungrazed control of 5 acres is maintained for comparison.

This study started with a stocking rate of one animal unit per 12 acres but has been increased to one animal unit per 9 acres on both grazing programs. Grazing animals include cattle and sheep on a 3:1 animal unit ratio. Predominant wildlife include whitetail deer, turkey, bobwhite, and scaled quail.

Paddocks of various sizes have been designed to allow simulated 8, 16, and 32 paddock programs. Therefore, forage responses under these programs can be studied. Since the same herd of animals will be used for this study, no animal response information will be possible for the three intensities.

With the Savory Grazing Method the periods of grazing are short—from 1 to 10 days. The grazing period is flexible to allow animal performance. The shortest grazing periods are designed for the rapid plant growth period. The period of rest, on the other hand, varies from 30 to 60 days. The longest rest occurs during the plant's nongrowth or slow-growth periods.

Since this method is so new, it may help to give some background information. Research from other countries has shown this grazing method to give good range, livestock and wildlife performance. The method involves a planning process to allow flexibility for animal and forage production. Unequal size of pastures is allowed for in the planning phase of the program. Grazing schedules are formulated and adequate records are maintained to allow the rancher to plan moves between pastures for best animal performance. The animals though may ultimately indicate the need for moves. Animals tend to group at the next unopened gate as vegetation becomes fouled.

Basic biological principles of plant, soil and animal succession, energy flow, nutrient cycling and water cycling are similar to those incorporated into grazing systems for the United States. This method concentrates on the management of the soil and ecosystem as a whole rather than a plant species or physiology. The interpretation of other influences such as fire, length of rest, physiological effects of grazing or browsing, and the physical effects of the animals as a herd make up another difference. This herd effect is of real importance as researchers or ranchers are tempted to start on too small a scale to evaluate its potential merits. The herd effect must be assessed under conditions of adequate numbers to provide adequate trampling, grazing, and other attributes associated with a herd.

The importance of obtaining a maximum density of animals per minimum time is a key to this program. The importance of a maximum number of paddocks is stressed. The more paddocks in the cell the shorter the period that an area is grazed.

The number of paddocks has also shown by research in other countries to affect volume of production. Several things happen as paddock numbers increase that assist in forage production and animal performance. Some of these include:

1) The more paddocks, the higher the stock density per paddock.
2) The period of grazing in each paddock keeps getting shorter while the rests are longer and animal nutrition level increases.
3) The total number of days grazed per paddock per year decreases drastically.
4) Total cow days per acre per year remain the same so forage removal is similar.

The cell arrangement has values that are unique in energy and labor saving. The fact that all of the animals are in one herd most of the time reduces labor and savings on energy in checking animals. More intensive animal management programs are possible and a must. The concentration of livestock working, feeding, and watering facilities reduces the capital investment necessary for developing an area.

The cell design is a way of increasing livestock performance with the Savory Grazing Method. The central watering appears to be a very stabilizing force for the animal. The

grazing pattern is much like that of a free-ranging animal in that they graze into water from one area and then graze back out in another direction with the water being their home base. With the cell, the manager controls their wandering with fences.

One might assume that with more frequent moves between paddocks that animals would travel more. The experience at Angelo State University and another Texas study has shown that animals travel less under the Savory Grazing Method than with continuous grazing.

Recent developments in fencing have allowed economical techniques when one looks at the interior fencing as merely a method of controlling animal distribution. The new electrical systems cause fewer problems with electrical shorts, fires, and other early troubles. The pulsating current allows for relatively higher voltage and amperage which allows effective livestock management.

As few as 2 wires, spaced at 20 to 24 inches above ground, effectively control cattle and sheep. Installed fencing is roughly one-fifth the cost of traditional net wire fences.

In Conclusion

Realistically, a rancher must evaluate his goals, interests, and economic situation to determine his level of grazing management. A person wishing to expand his livestock genetic pool, to increase size of herd on a limited range resource, or to increase production while recognizing he is increasing his risk should consider Short Duration Grazing. Forage response will be high when properly applied. During high rainfall years production increases can be utilized. When droughts come along, which they will, the producer must be flexible enough to reduce stock according to the intensity and duration of the dry period. Total management must be flexible and a high level of management is required at all times. Management is critical and challenging.

There are indications that the Savory Grazing Method will allow for greater animal performance. A much higher degree of forage manipulation is possible where large areas are cut into smaller areas. This grazing regime is one of the first that allows drastically increased forage production and still has favorable rancher appeal. This rancher appeal is evidenced in animal production and an opportunity to incorporate a high degree of livestock management. Distinctions in Short Duration Grazing and the Savory Grazing Method must be realized in management.

When one considers the cost of running animals on a ranch as reported by Robert Kensing, Texas A&M University Agricultural Extension Economist, we find a cost breakdown as follows:

• Land	50%	Includes lease, mineral and protein supplement
• Labor	12%	To physically run the ranch with both owned and hired labor
• Production	18%	Vehicles, gasoline, veterinary, depreciation, taxes, disease and death loss
• Capital	20%	Interest on investment and operating capital

To obtain the maximum utilization of grazing programs we must evaluate the economic balance it may have on our ranch resource. We may be able to reduce land cost by running more animals with less feed cost. The cell design can reduce the labor and production inputs per animal unit. A rancher must evaluate the effects that physical developments may have on the ranch enterprise and the fixed costs or capital requirements for the ranch.

RISC Notice

The Range Inventory Standardization Committee (RISC) has completed review drafts of several working papers concerning criteria and standards for range inventory and monitoring. Topics include (1) range classification and mapping, (2) collection of inventory and monitoring data, (3) interpretation of condition, trend and grazing capacity, and (4) terminology. Copies have been sent for review to members of the Board of Directors, to all Section Presidents, and to selected reviewers in the agencies represented by RISC members. If you do not have access to a copy and would like to contribute comments to RISC, please write or phone and ask for a copy. RISC will meet again in mid-June to consider comments and therefore comments should be returned by June 1. Address inquiries to:

Lamar Smith
Range Resources Division, BSE 325
University of Arizona
Tucson, Arizona 85721
(602) 626-3803

Drought Management

A symposium on crop and plant production and management under drought conditions will be held in Tulsa, Oklahoma on Oct. 4, 5 and 6, 1982 at the Williams Center Plaza. The material will be oriented for users in crop culture and range with consideration for present and future technology for the management of plant and environmental factors of plant production under drought conditions in the Great Plains.

The symposium was organized by the evapotranspiration committee (GPC-1) of the Great Plains Agricultural Council and includes speakers from 4 continents. For information please contact *S.K. Dunn, Oklahoma Water Resources Institute, Oklahoma State University, Stillwater, OK 74078. Ph. 405/624-6995.*

Issues and Technology

A symposium focusing on wildlife management techniques and energy development in the Rocky Mountain West will be held November 15-17, 1982, in Steamboat Springs, Colorado.

Major topic areas of the symposium include: cumulative and secondary impacts to wildlife from development activities; impact mitigation techniques; and sensitive habitat management. Papers should focus on research or management solutions in one of the three topic areas.

Persons wishing to present papers should submit an abstract, no more than 300 words, no later than May 1, 1982, to Mr. Robert Comer, Thorne Ecological Institute 4860 Riverbend Road, Boulder, Colorado 80301 (303) 443-7325.

Current Literature of Range Management

This section has the objective of alerting SRM members and other readers of *Rangelands* on the availability of new, useful literature being published on applied range management. Your recommendations on making this bibliography more useful are requested. Also, the compilers request readers to suggest literature items—and preferably also contribute individual copies—for including in this section and subsequent issues.

A Bibliography of Literature Related to Grazing Systems; by Christopher D. Allison and M. Karl Wood; 1981; N. Mex. Agric. Ext. Serv., Range Impr. Task Force Rep. 10; 58 p. (Coop. Ext. Serv., N. Mex. State Univ., Las Cruces, N. Mex. 88003) A compilation of references dealing with facets of grazing management systems, such as stocking strategies, rotation schemes, plant physiology, watershed, and animal production studies; includes U.S. and foreign publications; not annotated.

A Comparison of Techniques for Interseeding Native Mixed Grass Prairie in Western North Dakota; by Paul E. Nyren, Harold Goetz, and Dean E. Williams; 1981; N. Dak. Farm Res. 39(1):17-21. (Agric. Expt. Sta., N. Dak. State Univ., Fargo, No. Dak. 58105) A study to evaluate chemical and mechanical sod control for interseeding grasses into native mixed grass prairie.

Contribution of Mixtures of Three Chaparral Shrubs to the Protein and Energy Requirements of Spanish Goats; by Ahmed E. Sidahmed, James G. Morris, Ling J. Koong, and Steven R. Radosevich; J. Anim. Sci. 53(5):1391-1400. (Dept. of Animal Science, Univ. Calif., Davis 95616) A study of the nutritive value of simulated browse intake and the comparison of indicator and in vitro techniques with the in vivo technique for predicting digestibility.

Establishment of Seeded Grasslands for Wildlife Habitat in the Prairie Pothole Region; by H.F. Duebbert, E.T. Jacobson, K.F. Higgins, and E.B. Podoll; 1981; USDI, Fish & Wildl. Serv. Spec. Sci. Rep.-Wildl. 234; 21 p. (Free; Publications Unit, Fish & Wildl. Serv., Washington, D.C. 20240). Describes techniques for establishment of seeded grasslands on cultivated soils to provide wildlife with habitat within glaciated prairie pothole regions in the north central U.S.

Guidelines for Uniform Beef Improvement Programs; by Dixon D. Hubbard; 1981 (Rev.); USDA Program Aid 1020; 76 p. (USDA, Extension Service, Room 5525-South Bldg., Washington, D.C. 20250) Outlines procedures for measuring and recording beef cattle performance data while achieving greater uniformity of terminology and methods of measuring performance traits.

Habitat Management Guides for the American Pronghorn Antelope; by Jim Yoakum; 1980; USDI, Bur. Land Mgt. Tech. Note 347; 77 p. (DSC, Federal Center Bldg. 50, Denver, Colo. 80225) Summarizes the life history, ecology, habitat requirements, livestock relationships, and vegetation manipulation of the sagebrush grassland steppes for pronghorn antelope.

Height Replacement of Selected Woody Plants Following Burning or Shredding; by W.T. Hamilton, L.M. Kitchen, and C.J. Scifres; 1981; Texas Agric. Expt. Sta. Bul. 1361; 8 p. (Dept. of Range Science, Texas A&M Univ., College Station, Texas 77843) Compared burning and shredding for woody plant suppression and application intervals required to be effective.

Interior West Watershed Management: Proceedings of a Symposium Held April 8, 9, and 10, 1980, Spokane, Washington; edited by David M. Baumgartner; 1981; Cooperative Extension, Washington State Univ., Pullman, Wash.; 288 p. (Copies can be purchased from Cooperative Extension, 323 Ag. Sciences, Washington State Univ., Pullman, Wash. 99164) Includes papers on background and techniques of watershed management in the interior of western U.S.

A Linear Programming Model for Cattle Range Management; by W.H. Weitkamp, W.J. Clawson, D.M. Center, and W.A. Williams; 1980; Univ. Calif., Div. Agric. Sci. Bul. 1900; 17 p. (Cooperative Extension, Univ. Calif., Berkeley, Cal. 94720) Provides a model for making management decisions in range cattle operations on California annual range ranches.

A Manual for Pheasant Habitat Management on Private Lands in Utah; by D.W. Olsen and Jon P. Leatham; 1980; Utah Div. Wildl. Resources Pub. 80-4; 33 p. (Utah Div. of Wildl. Resources, Salt Lake City, Utah) A comprehensive manual including sections on seasonal habitat requirements, detrimental land uses and alternatives, habitat management and improvement guidelines, and individual farm habitat management planning.

Mathematical Hypothesis for Herbage Production Potential on Pinyon-Juniper Areas; by Warren P. Clary and Chester E. Jensen; 1981; USDA, For. Serv. Res. Paper INT-279; 8 p. (USDA, Intermountain For. & Range Expt. Sta., Ogden, Utah 84401) A model considering natural site factors for predicting herbage production on sites being considered for conversion to grassland.

Montana Range Plants: Common and Scientific Names; by Carl Wambolt; 1981; Mon. Agric. Ext. Bul. 355; 27 p. (Cooperative Extension Serv., Mon. State Univ., Bozeman, Mon. 59717) Lists the currently most acceptable nomenclature and information relating to plant longevity, origin, season of growth, and grazing response to cattle of the principal Montana range plants.

Mountain Meadow Management: 12 Years of Variety, Fertilization, Irrigation, and Renovation Research; by R.H. Hart, H.R. Haise, D.D. Walker, and R.D. Lewis; 1980; USDA ARR-W-16; 29 p. (USDA, Agric. Res. Serv., High Plains Grasslands Res. Sta., 8408 Hildreth Road, Cheyenne, Wyo. 82001) A summary of a series of experiments in Wyoming mountain meadows carried out between 1956 and 1968 with application recommendations.

Compiled by John F. Vallentine (Professor of Range Science), Jule Durfee, Ronald Rodriguez, and Marlon Sheridan (Students in Range Literature Seminar), Brigham Young University, Provo, Utah 84602.

Nutritional Value of Range Plants in the Edwards Plateau Region of Texas; by J.E. Huston, B.S. Rector, L.B. Merrill, and B.S. Engdahl; 1981; Texas Agric. Expt. Sta. Bul. 1357; 16 p. (Agric. Expt. Sta., Texas A&M Univ., College Station, Tex. 77843) Includes the effects of season and climatic conditions on the nutritive value of Edwards Plateau plants and plant parts and relates this to dietary selection by the various grazing animal species.

Organization, Costs, and Returns of Cattle Ranches in Southwestern New Mexico, 1979; by James R. Gray, Michael L. Jones, and John M. Fowler; 1981; N. Mex. Agric. Expt. Sta. Bul. 684; 44 p. (Agric. Expt. Sta., N. Mex. State Univ., Las Cruces, N. Mex. 88003) A survey and interpretation of ranch management practices in 1979 with ranch budget projections.

The Pronghorn Antelope in Alberta; by George J. Mitchell; 1980; Univ. of Sask., Regina, Sask.; 165 p. (Dept. of Biology, Univ. of Sask., Regina, Sask. S4S 0A2) Emphasizes the status, biology, ecology, behaviour, population dynamics, and management of the pronghorn antelope in Alberta.

Research and Education Opportunities in Livestock Grazing; by Don D. Dwyer; 1981; J. Anim. Sci. 52(3):650-654. (Range Science Dept., Utah State Univ., Logan, Utah 84322) Concentrates on the great need for expanded research and education programs on grazing management and range livestock production and summarizes the new programs and priorities this will require.

Response of Lactating Ewes to Snow as a Source of Water; by A.A. Degen and B.A. Young; 1981; Can. J. Anim. Sci. 61(1):73-79. (Dept. of Anim. Sci., Univ. of Alberta, Edmonton, Alta. T6G 2E3) Lactating ewes relying on snow as a source of water reduced their total water intake by about 35%, but this did not significantly affect their milk yield or total body water or lamb gains.

Sage Grouse Management in Idaho; by Robert E. Autenrieth; 1981; Idaho Dept. Fish & Game Bul. 9; 238 p. (Idaho Dept. Fish & Game, Boise, Idaho) A comprehensive manual on sage grouse management including life history, habitat requirements, diseases, predation, harvest, habitat utilization, and management procedures and plans.

SEA-AR Range Research Assessment: Western United States; by Carlton H. Herbel, Phillip L. Sims, William A. Laycock, Russell J. Lorenz, Raymond A. Evans, and Kenneth G. Renard; 1981; USDA, Sci. & Educ. Admin., Washington, D.C.; var. paged. (USDA, Agric. Res. Serv., Washington, D.C. 20250) An assessment of current problems in the management of rangelands, the status of range research, range research needs, and a strategy for future range research.

Using Short-Term Calf Removal and Flushing to Improve Pregnancy Rate; by K.J. Nix, Spencer Roberts, and J.N. Wiltbank; 1981; Texas Agric. Expt. Sta. Prog. Rep. 3780; 2 p. (Agric. Expt. Sta., Texas A&M Univ., College Station, Texas 77843) A report of several flushing and calf removal trials in southern Texas to determine their effects on improving pregnancy rate.

Vegetative Rehabilitation and Equipment Workshop, 35th Annual Report, Tulsa, Oklahoma, February 8 & 9, 1981; T.V. Russell (Chm.); USDA, For. Serv., Equipment Dev. Center, Missoula, Mon.; 84 p. (USDA, For. Serv. Equip. Dev. Center, Missoula, Mon. 59801) The proceedings of an annual workshop on improving rangelands and the development and use of range equipment.

Wetland Vegetation, Environmental Factors, and Their Interaction in Strip Mine Ponds, Stockdams, and Natural Wetlands; by Richard A. Olson; 1981; USDA, For. Serv. Gen. Tech. Rep. RM-85; 19 p. (USDA, Rocky Mtn. For. & Range Expt. Sta., 240 W. Prospect St Fort Collins, Colo. 80526) A synthesis of factors that determine wetland plant community composition and resulting wildlife habitat quality and their interrelationships.

Wildlife Habitats in Managed Rangelands—The Great Basin of Southeastern Oregon: Plant Communities and Their Importance to Wildlife; by J. Edward Dealy, Donavin A. Leckenby, and Diane M. Concannon; 1981; USDA, For. Serv. Gen. Tech. Rep. PNW-120; 66 p. (USDA, Pacific Northwest For. & Range Expt. Sta., P.O. Box 3141, Portland, Ore. 97208) Describes and provides a field key to plant communities and relates their plant composition, vertical and horizontal structure, and seasonal availability of forage to wildlife habitats.

Wildlife Science: Gaining Reliable Knowledge; H. Charles Romesburg; 1981; J. Wildl. Mgt. 45(2):293-313. (Dept. For. & Outdoor Recr., Utah State Univ., Logan, Utah 84322) Challenges the reliability of ideas and facts used in wildlife and related resources management, points out the misinformation and confusion often gained from computer simulation models, and suggests the use of improved techniques for measuring reliability of information.

Book Review

Samuel H. Lamb of Santa Fe, New Mexico, author of *Woody Plants of the Southwest,* has come out with another plant book. This one, *Native Trees and Shrubs of the Hawaiian Islands,* gives us a definitive study of the trees and shrubs of our 50th state. It is written in easy to understand language with lots of keys, Latin and common names, and beautiful photographs. Woven into his narrative are the charming folk stories about the plants. He also tells of their uses in the changing world of the Pacific Islands.

It will make an excellent reference for anyone interested in the trees and shrubs of the Hawaiian Islands. It was published in September 1981 by the Sunstone Press, Box 2321, Santa Fe, New Mexico 87501. Size is 8½ inches by 11 with 160 pages and sells for $14.95, strong paper back.—*Editor*

Legislative Log

The second session of the 97th U.S. Congress convened on January 25. On the next evening President Reagan delivered his "State of the Union" message.

The state of the economy and efforts to improve it used up most of the available time and efforts during 1981. Most forecasters believe that 1982 will not be different from 1981 in this respect but hopes are high for the last half of the year. If the economy improves some substantive legislation may be enacted during the last few weeks of the second Congressional session.

On February 8 the President's Budget for fiscal year 1983 was released. Budgets for the federal land managing agencies fared well in comparison with the overall budget revisions. In last year's budget federal land managing agencies were reduced an average of 10%. The preliminary budgets for this coming year, (F.Y. 1983) are slightly less than 10% not including inflation. However, most informed observers believe that Congress will reduce the proposed budgets due to the large estimated deficit for F.Y. 1983 and beyond.

Personnel ceilings are being reduced for all non-defense agencies. These reductions vary by programs within agencies and range from none, or in some cases increases where needed, to 3 to 10%. An average of 3 to 5% personnel decrease in 1982 and in 1983 appears likely. Much of this decrease will be absorbed by attrition through retirements, resignations, etc., but some reductions in force (RIF's) will be needed.

The administration has recently announced some changes that will affect public land managaing agencies. User fees for federal recreation areas are being increased as well as charges being instituted for some services. A proposal on this subject is expected in the near future from the administration to the Congress.

As announced in the "State of the Union" message, the administration is planning to turn over many activites, in whole or in part, to the states and local communities. This will be a several year's program. It will change some of the cooperative programs of the federal land management agencies. Many of the details have not yet been developed. Many aspects of this proposal will require much negotiation with the states and local communities and in most cases with the Congress.

The proposed Environmental Protection Agency (EPA) budget for F.Y. 1983 was reduced by 29 per cent under what Congress appropriated for the agency in 1981. There has recently been much publicity and discussion on this agency's budget. Probably hearings will resolve this subject at a compromise level of finding since both political parties are concerned. On some subjects EPA has bipartisan support in the Congress. Several recent opinion polls indicate wide public support for environmental protection.

Proposed Bill	Description of Bill	Status as of Feb. 15, 1982
H.R. 5282 Cong. Philip Burton (Calif.)	Mineral Leasing in Wilderness. This bill proposes to withdraw the National Wilderness Preservation System and other lands from operation of the general mining and mineral leasing laws.	H.R. 5282 was introduced on December 16, 1981. It was referred jointly to the Interior and Agriculture Committee. On Feb. 9, 1982 the House Subcommittee on Public Lands and National Parks held oversight hearings. There is much interest in this legislation in the Congress.
H.R. 3208 Rhodes Ariz. and S956 Senator DeConcini Ariz.	A bill to amend the Reclamation Safety of Dams Act of 1978. The bill proposes to increase appropriations from $100 million to $450 million for safety work at 35 western dams.	House Interior's Subcommittee on Water and Power Resources held a hearing on January 26, 1982. Representatives of water agencies from Arizona and California testified in favor of the bill.
H.R. 5252 Cong. Thomas Luken (Ohio) and 5 colleagues	A bill to amend the Clean Air Act. Would change certain of the Act's provisions and would compromise certain standards and dates of attainments.	Introduced on December 16 and referred to the Energy and Commerce Committee. Many observers believe that it will be difficult to get a revised Clean Air Act by Oct. 1, 1982. Several public opion polls indicate wide public support.

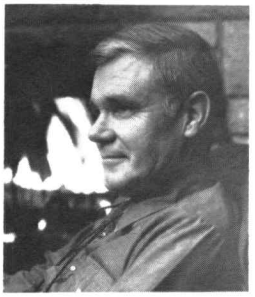
F.Y. 1983 will be the first bill budget year for the administration's four year Farm Bill of 1981 approved by the President on December 22, 1981. SRM is interested in Section M of Title XIV which authorizes up to $10 million for Cooperative Range Research. There are no appropriations in the budget for this item for F.Y. 1983. Hopefully, the new program will be implemented in F.Y. 1984.

There are many additional changes in policy and innovations by the administration. In summary: more attention is being given to revenue-producing activities such as sales of timber, charge permits of all

kinds, and mineral, oil and gas leasing. There has been a decrease in land acquisition. Sales of surplus government land are planned. Where feasible there will be more contracting out of services. Information staffing and services are being curtailed. Regulations are being streamlined. Research is being curtailed. Some construction is being deferred. Increased private and state roles are being promoted.

The above will challenge the federal land managing and other agency personnel to adapt to the changed emphasis.

President's Notes



It's too bad that every member of the Society for Range Management couldn't attend our meeting in Calgary. It was one to be long remembered. Our International Mountain Section hosts did a superlative job, from developing an impressive technical program with scores of excellent papers to energizing our adrenalin with an effervescent Molly and the Calgary Stampeders. They also took advantage of some of the unique features offered by the Calgary area, such as the Spruce Meadows Equestrian Centre and spectacular Lake Louise. The weatherman cooperated, too, so that we had relatively "mild" weather. How mild depends on your point of reference—no blizzards, anyhow.

Nearly 900 persons registered at Calgary, a figure that spelled relief for the planners who had worried that winter storms, distances, and travel constraints would hold down attendance. Noteworthy, too, is the fact that 278 students were there, a very creditable figure when compared with other SRM meetings. Besides large contingents from Canada, the U.S., and Mexico, several other countries were represented, including Australia.

Our traditional banquet is always a convention highlight. Our affable, articulate Master of Ceremonies, Chip Merrill was almost as excited about the **Renner Award as the recipient,** Danny Freeman. Danny beamed as he accepted the award. Few people are more deserving of our Society's highest award than our *Rangelands* editor and the ovation given Danny recognized that fact. A member of the Royal Canadian Mounted Police, decked out in his scarlet tunic, was a colorful guest at the banquet.

In the membership meeting, outgoing President Chip Merrill discussed the Income and Expense Statement of December 31, 1981. He noted that our net worth has increased dramatically in the last few years, denoting **our general financial health.** Of immediate interest, as Chip pointed out, is the fact that in 1981 the Society came within $3,000 of living solely on the current year's income, nearly eliminating the need to borrow on the future as we have in the past.

With our maturing as a Society, it was time to begin an endowment fund for the long-pull financial stability needed to assure continuance of many of our activities. John Hunter, our Finance Chairman, kicked off **an endowment program** approved by the Board of Directors with the concurrence of the Advisory Council. It took off like a scalded cat, and it has only just begun. You will hear more about this and I hope that once everyone has been informed, strong support will follow. With John Hunter's enthusiasm for the endowment fund, I'm looking forward to its blossoming into a strong financial asset to SRM.

One of the foremost items on the Advisory Council and Board of Directors agendas in Calgary was the guidelines for seeking, identifying, and **selecting an Executive Secretary** for our Society. Elsewhere in *Rangelands* you will read the particulars relating to applicants' qualifications and the procedures for applying. I am confident that Clark Martin, Chairman of the Search Committee, will receive names of numerous well—qualified individuals. The Board will interview for selection at the Flagstaff meeting in July, so the ball needs to start rolling at once. Our whole membership will be affected by the selection, so I hope the whole membership will take an active interest in identifying potential candidates.

While most of the people at Calgary were listening to papers, the Advisory Council, Board, and committees were hard at work. I am always impressed by the dedication exhibited within these groups as they cover the broad spectrum of Society activities. Again, despite travel restrictions, these bodies were very active in carrying out their individual or collective roles. You will see the fruits of their labors emerging on many fronts as time goes on. One that will be visible very soon is a proposal from the Producer Affairs Committee. Assisted through the generosity of the Redd Foundation, we **will soon initiate a four-state pilot program** to encourage producer membership.

The four states are Oklahoma, Kansas, Wyoming, and Texas. In these states, SRM presence will be seen in producers' meetings and publications. Local leaders will be involved in getting the message of member benefits across to other producers. The ideas grew from the results of a survey of producer members instigated by the Producer Affairs Committee. We plan to follow similar techniques in approaching other components of our Society membership in order to maintain the balance which is so important to the Society perspective.

A much-discussed program has been launched by the establishment of a **scholarship by rancher** Dick Whetsell of Oklahoma. The scholarship stipulates that an awardee will spend time on a ranch as an intern while in school. I sincerely hope that intern program gains wide application. It offers an excellent means of putting calluses on the hands— and brains— of our largely urban-origin students. You'll be hearing more about the Whetsell scholarship and ranch internships.

By way of development by the Public Affairs Committee, through endorsement by the Advisory Council and approval by the Board, the Society now has a **policy formulation process** which enables every member to have input. Hours of thought went into this important document. It can play a vital role in keeping the Society a vibrant, healthy organization in tune with the times but insured against whim, fad, or shallow thought. The written process will be distributed to all SRM

members with the next regular mailing sent from Denver.

The Society has evolved into **an issue-conscious body** which is making its voice heard wherever we feel our goals and objectives can be achieved. The individual members, the Sections and the elected officers are carrying the banner into many arenas. In Denver the Board recently OK'd a resolution related to the Resource Conservation Act proposals offered for public input by the Department of Agriculture. We requested the Secretary to direct the Soil Conservation Service to rewrite the proposal to better implement the intent of the law. In Calgary, the Advisory Council endorsed the resolution after it had reviewed it. Also in Calgary, the Public Affairs Committee, the Advisory Council and the Board collaborated on a resolution pertaining to the Resource Planning Act proposal being offered for public review and comment. This resolution requested the Secretary of Agriculture to direct the Forest Service to rewrite the proposed RPA program to better implement the law. Hopefully, other SRM members availed themselves of the opportunity to comment constructively on these important documents.

Last year the Society played a role in the enactment of Congressional legislation authorizing a matching fund program of range research. We will continue to strive to implementation of the program. Recognizing that funding for new programs will be hard to obtain, we will need to work imaginatively for this worthwhile cause, meanwhile endorsing overall reductions in governmental expenditures. It can be done.

There is no dearth of challenges for our Society. Looking down the road in 1982, I am looking forward to working with every Society member to meet those challenges.—**John Bohning,** President, SRM.

The SRM Endowment—The Key to Financial Stability

The Society for Range Management now has a means of letting members and friends assure its financial stability. The means is through tax deductible contributions to an endowment fund.

The Finance Committee, at the summer meeting in Bismarck, recommended that the Society for Range Management establish a general endowment fund. This fund would be supported by members and friends of SRM through contributions of money, stock, real estate, etc. The properties given would be sold and the proceeds placed in the Endowment Fund. As the *interest* only from this endowment would be used, the Endowment Fund will provide perpetual support for the Society. The Board of Directors will guide the investment and determine how the interest from the endowment will be used.

The Board of Directors voted unanimously to establish the SRM Endowment Fund at the Calgary Meeting. As Chairman of the Finance Committee, I announced the establishment of this Endowment Fund at the business meeting in Calgary. The response by SRM members was tremendous! Thirty six hundred dollars were given or pledged at this meeting. Over 50 additional members committed themselves to mail contributions in the near future. This tremendous response is indicative of everyone's enthusiasm. One member stated he did not want to make any more contributions for operational expenses, but he would gladly support the Endowment Fund on a sustaining basis. He then handed me a check for one hundred dollars.

Best 'Self-Help' Available

The Endowment Fund gives the SRM a mechanism to control its own financial destiny. It is the best "self help" available. If we build this fund at a rather modest rate, it will have a very significant impact on the financial future of SRM. Let me speculate with you. If our five thousand members gave one dollar a year for ten years, the fund would grow to fifty thousand dollars in ten years. Remember only the interest from this fund can be used by SRM, so fifty thousand at fifteen percent interest is seventy five hundred dollars per year—not bad! Now if one-half of our members gave ten dollars per year for ten years, this fund would grow to two hundred fifty thousand dollars. At fifteen percent interest, the amount would be thirty seven thousand five hundred dollars—even better! If one-fourth of SRM members gave one hundred dollars per year for ten years, this fund would grow to one million two hundred fifty thousand dollars. At fifteen percent interest, the amount would be one hundred seventy-seven thousand five hundred dollars—outstanding!!!

Within Our Reach

I realize this exercise on paper does not build an endowment fund, but it helps us to visualize what a significant fund we can build. The above illustrations are within our reach. We are the ones to determine what we can accomplish.

At the Calgary meeting, I announced the goal I have established for myself is one hundred dollars per year for ten years. Your contribution is a personal decision, a private matter. I realize that many of our members, especially students, are not able to contribute, but many of us can support the fund. In discussing my desires and goals with one of our SRM members he declared he would match this goal as he is as good as I. He thought for a second, then said, "No, I am better than you. As a matter of fact, you may have hit on a good way to promote this fund. Everybody is better than you, so if that is the only criteria, we will underwrite a substantial endowment fund!"

It is my belief the Endowment Fund has the potential to secure the financial future of SRM. I challenge you to join with me in this very important undertaking.

Please make checks payable to SRM marked for the Endowment Fund and mail to Society for Range Management, 2760 West Fifth Ave., Denver, Colorado 80204. Any contribution will be greatly appreciated. Remember even one dollar per member per year amounts to five thousand dollars per year!—**John R. Hunter,** Chairman, Finance Committee.

Freeman's Gripes and Remarks

Not often do I comment on a specific article in *Rangelands*. Most of the articles are good, better, or best. However, there is one in the Feb. 1982, *Rangelands* that can be classed as extra special. It has a message that SRM members are concerned about or should be. Go back and read it again. If you have any ideas on the matter please let Jack Bohning know, because he agrees that John Stechman has come up with a real eye-opener and thought-provoker.

Society for Range Management
Statement of General Fund Income and Expense
December 31, 1982

Operating Income	1981
Membership-current	$ 54,160
Membership-future	130,654
Subscriptions-*JRM*	61,583
Adv. & page charges-*JRM*	34,883
Subscriptions-*Range.*	4,503
Adv. & page charges-*Range.*	4,320
Publication sales	12,511
Sections	3,019
Annual meeting	20,961
Interest	8,137
Other	
OWRC films	1,663
Jewelry	263
Certification	1,700
Accreditation	10,122
Contract services	17,476
Donations-unrestricted	5,255
Miscellaneous	431
TOTAL OPERATING INCOME	371,641
Trust Funds (net change) (contributions +earnings) distributions=net chg.)	
Avon Denham	960
Memorial	849
Life memberships	21,872
Building trust	15,615
Renner	1,140
Adams scholarship	792
Endowment	103
TOTAL INCOME	$412,972

Operating Expense	1981
Journal of Range Mgt.	$ 60,432
Rangelands	33,412
Publications	2,684
Sections	2,617
Annual Meeting	5,930
Jewelry	1,055
Monetary Exchange	1,211
Accreditation	6,273
Contract services	19,168
Miscellaneous	6,025
Payroll, taxes & ins.	106,699
Dues & subscriptions	702
Postage & shipping	11,148
Committee	2,743
Stationery & envelopes	3,162
Other office supplies	8,091
Travel	6,240
Telephone	3,753
Equip. maint.	3,004
Accounting & legal	200
Equip. leases	13,173
Insurance	997
Repairs & maint.	2,277
Awards	2,295
Displays	92
Utilities & taxes	6,766
Interest	10,532
Washington office	279
Depreciation	15,201
Misc. office	370
TOTAL OPER. EXP.	$336,531

Assets		*Liabilities*	
Current Assets:	*1981*	*Current Liabilities*	*1981*
Cash on hand	$19,644	Section dues payable	$ 9,815
Cash-certificates	125,955	F.I.C.A. taxes payable	638
Cash-Avon Denham fund	960	Fed. w/h taxes pay.	1,375
Cash-Memorial fund	1,757	Colo. w/h taxes pay.	594
Cash-life member fund	41,139	Denver taxes payable	67
Cash-Building fund	17,304	Kaiser health ins. pay.	118
Cash-Renner fund	13,151	Total Current Liabilities	$ 12,607
Cash-Adams scholarship	792		
Cash-endowment fund	103	*Long-term Debts*	
Total cash funds	$220,805	Notes pay-members	$ 68,000
Total current assets	$220,805	Notes pay-Prudential	25,120
		Notes pay-typesetter	13,333
Fixed Assets:		Notes pay-3m copier	6,429
Buildings & improv.	$151,033	Total Long Term Debt	$112,882
Less accum. depreciation	17,098		
Net build. & improvements	$133,935	TOTAL LIABILITIES	$125,489
Leased promises-improv.	1,364	*Net Worth*	
Less: accum. depreciation	269	Capital	$ 20,672
Net leased plem. improv.	$ 1,095	Prior year Retained earnings	192,770
Furniture & office equip.	$77,719	Current year	
Less accum. depreciation	47,243	Retained Earnings	76,441
Net furn. & office equip.	$30,476	TOTAL NET WORTH	$289,883
Total Fixed Assets	$165,506		
Other Assets:			
Inventory publications	$ 29,061		
Total other assets	$29,061	TOTAL LIABILITIES	
TOTAL ASSETS	$415,372	AND NET WORTH	$415,372

Excess of income over expense $76,441 is reflected on the Balance Sheet as Current Year Retained Earnings

WANTED...WANTED...WANTED...WANTED

The Society needs a member with interest and experience in budget management and accounting. This individual will work with the Denver Staff and our computer accounting firm in reviewing the monthly financial statements for accuracy and in recommending and conducting various assessments of the financial records. It is anticipated that this task will require only a few hours per month, and can be accomplished by mail and phone contact with the Denver staff and our computer accounting firm. One or two trips to Denver may be required per year and such travel will be paid for by the Society as necessary. A member to provide this service to the Society is needed until an Executive Secretary is employed, and possibly longer. Please contact **Jack Bohning, SRM President, at P.O. 441, Prescott, AZ 86301 (ph: 602-445-7816)** for additional information.

POSITION ANNOUNCEMENT

TITLE: Research Scientist

LOCATION: Cuzco or Lima, Peru

CLOSING DATE FOR APPLICATION: 1 July 1982

RESPONSIBILITIES:

General: Provide logistical and administrative leadership together with technical support for all activities associated with the Texas Tech University—Small Ruminant Collaborative Research Support Program in Peru. Beginning 1 October 1982 and continuing through 2-5 years. Annual reappointment.

Specific: The person selected will work directly with on-site Texas Tech personnel and act as liaison for Texas Tech with Peruvian scientists, other U.S. scientists, students and appropriate Peruvian agency personnel associated with the Small Ruminant Collaborative Research Support Program.

QUALIFICATIONS: Applicants should have a minimum of an M.S. degree in Range or Animal Science with experience in conducting independent research activities. A strong background in range management and/or animal nutrition is desired. Preference will be shown for individuals with international experience but it is not an absolute requirement. Conversational competence in Spanish is required.

SALARY: Commensurate with education and experience. Non-tenure track position.

EMPLOYER: The Research Scientist will be directly responsible to the Principal Investigator for the Small Ruminant CRSP at Texas Tech University. There is need for coordination among all project leaders, Site Coordinator and Program Director from the University of California—Davis.

BENEFITS: The normal benefits package available to Texas Tech faculty will apply to this position. A limited housing allowance has been established.

CONTACT: All interested applicants send letter of [illegible]

research on the project may be used as a thesis problem.

QUALIFICATIONS: B.S. or M.S. in range science or related fields and an interest in weed control research. Field experience or range background desirable.

SALARY: $530 per month for those with a B.S. and $550 per month for those with an M.S.

FEES: Graduate research assistants pay regular resident fees, no out-of-state tuition. Assistants may enroll in 26 semester credit hours during the calendar year.

HOW TO APPLY: Applicants should submit a brief resume, transcripts, and three letters of recommendation from qualified individuals to:

Dr. Clenton Owensby
Department of Agronomy/Throckmorton Hall
Kansas State University
Manhattan, Kansas 66506

DATE AVAILABLE: Position will open on June 1, 1982 and applications will be received until May 15, 1982.

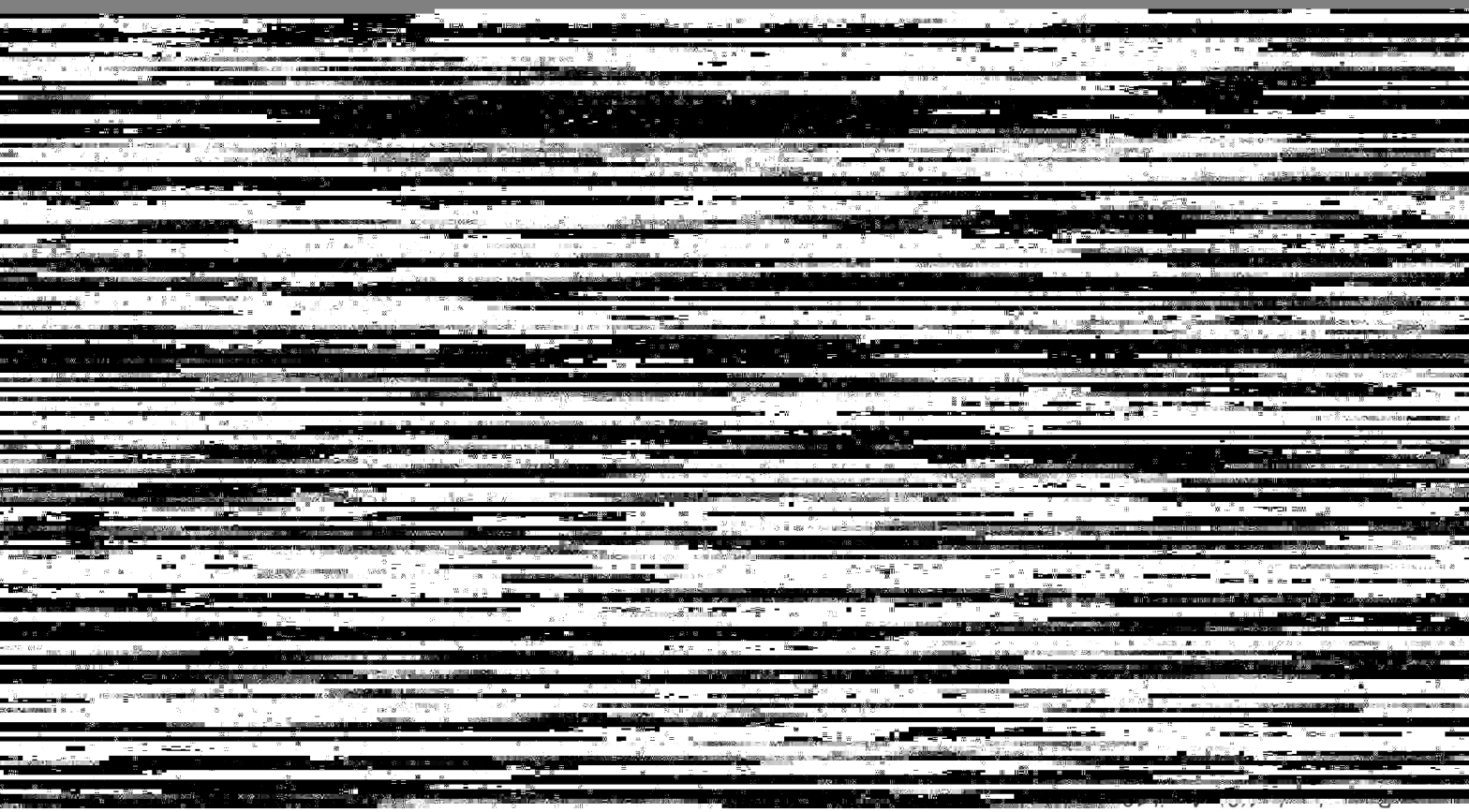
Kansas State University is an equal opportunity/affirmative action employer.

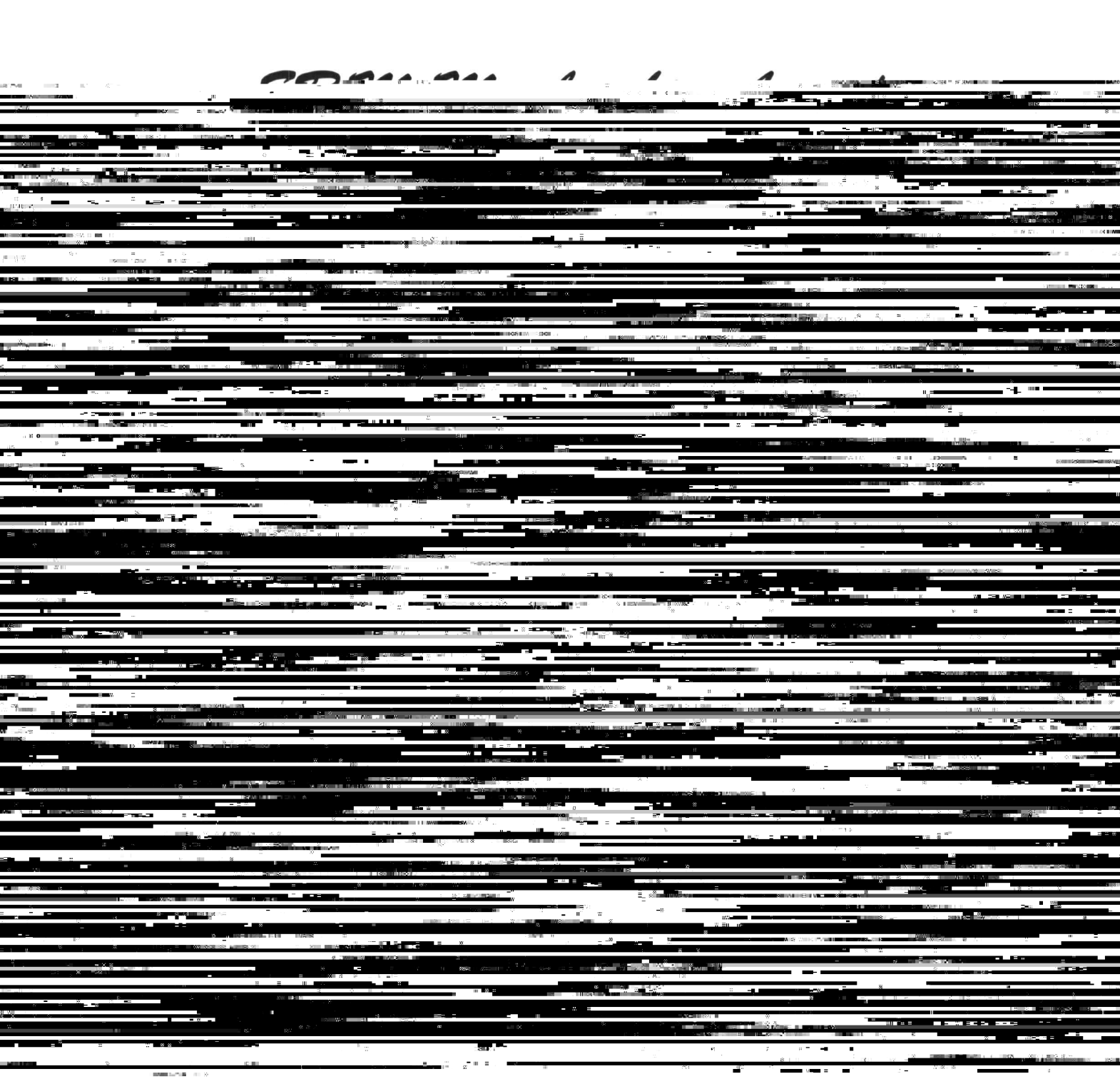
Agronomist/Range Forage Seed Production Specialist in Morocco

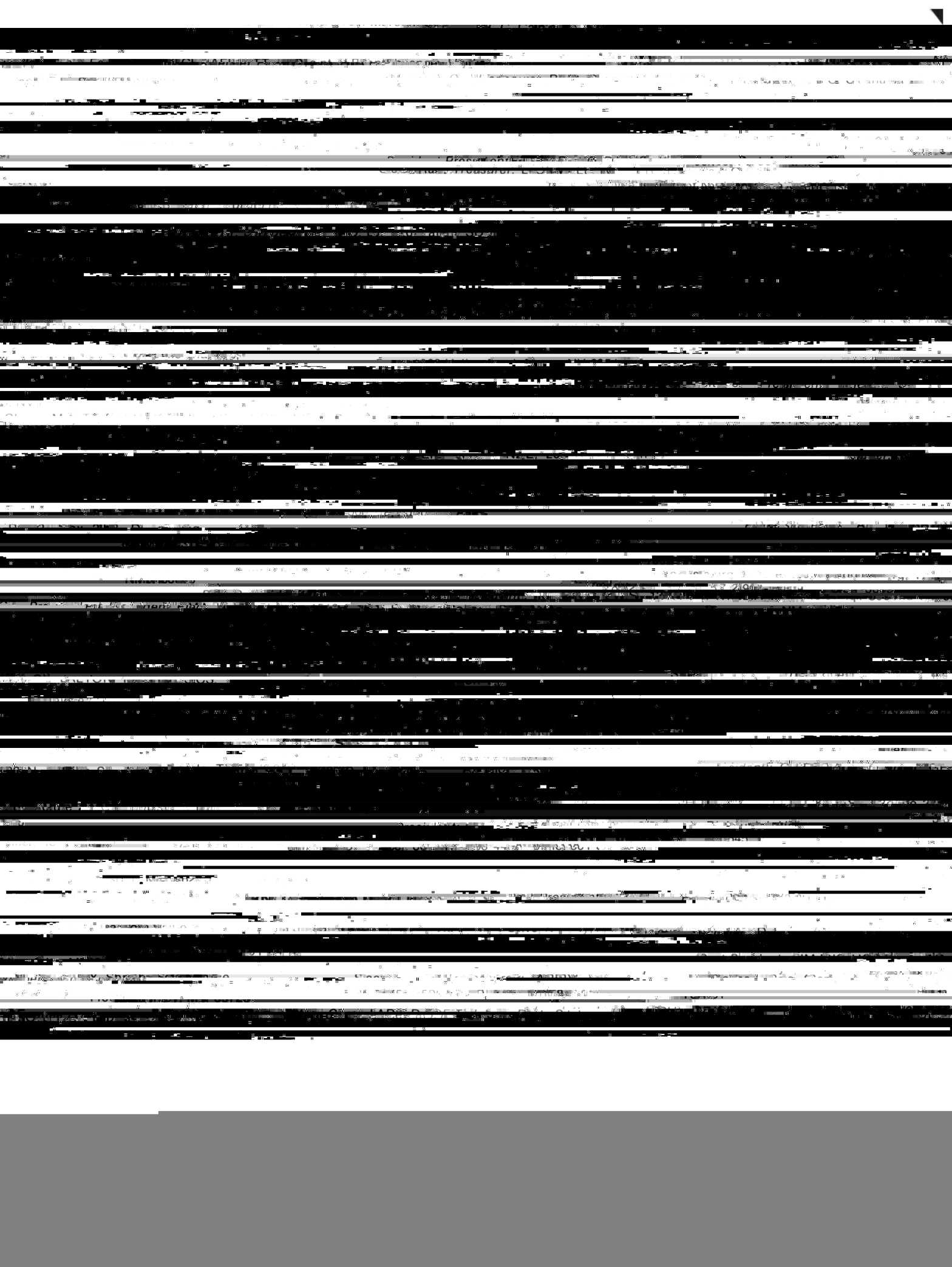
Desired Qualifications: Five years experience in forage seed production and forage evaluation. Knowledge of major forage plant species and adaptability requirements. Knowledge of field plot techniques and inbred line development. Knowledge and experience in grass and legume seed production and breeding techniques. Ability to plan and develop a seed stock production program. Ability to effectively plan and coordinate extension demonstration programs. Fundamental understanding of range ecology principles. Field experience in arid and semi-arid range ecosystems.

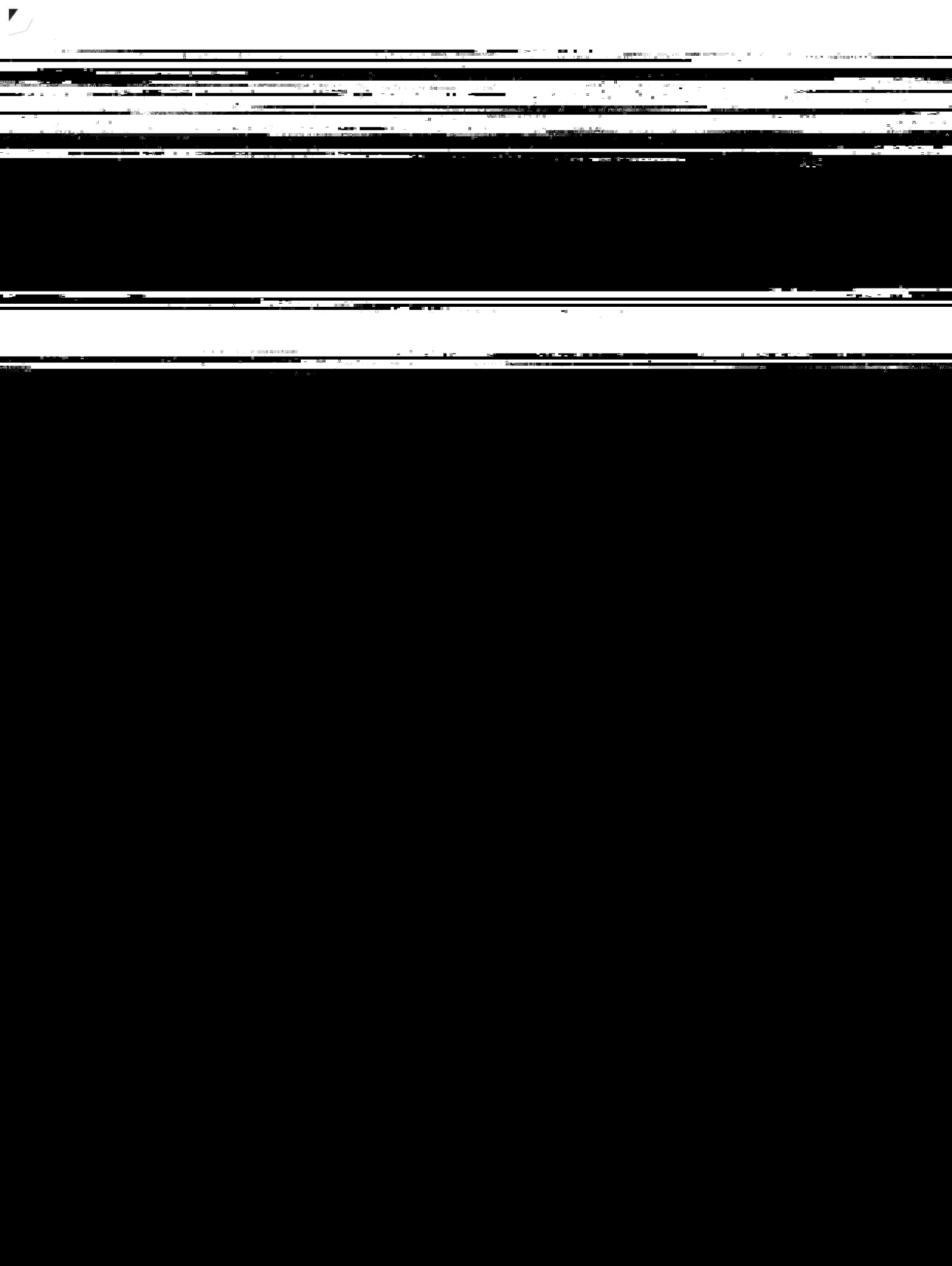
Desired Language Capability: English and French

[redacted]









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Newsletter Editor: DAN RODGERS, Division of Range Management, College of Agriculture, University of Wyoming, Laramie, WY 82071

Membership Report

We're doing a little better but still not up to our potential. Did you take seriously my challenge to you for each member to sign up a new member each week until this issue comes out?

Remember my last report to you in December *Rangelands?* I relayed to you how all sections were submitting a list of names needing SRM and SRM needing them. Well, 698 names were submitted to the Denver office. A letter was prepared telling of the advantages of becoming a new member. They were sent a copy of *Rangelands* and an application to join. These have been mailed. All of us are anxiously awaiting results. It's a bit too early to tell how effective this will be, but Denver has set up a code to show those applications responding to this effort. Jan Duck attended the Texas Section's annual meeting in early December and reported 15 new members had already responded with the letters out only a week or so.

Say, I only heard from eight of our twenty sections on the drive to establish a list of names and addresses of good prospects for members. Wonder why the other 12 section membership committee chairmen did not respond. It isn't too late. We are now collecting more names so that if our first effort pays off, we'll try it again.

Did you notice that President Merrill made arrangements with the Ryon Saddle and Ranch Supply to donate a saddle which will be presented to the individual signing up the most new members during 1982. Surely this will be incentive for all of us to work all out. It will be presented during the 1983 annual meeting in Albuquerque.

I will not be your membership chairman for 1982. Retirement beckons too strong! I will remain a member however and encourage you to continue to give support to your new chairman. We are encouraged with the way SRM is heading and ask each of you to daily make your pitch for additional members.—**Joe Norris**

						Family	
DUES SCHEDULE	Regular	Student	Sustaining	Emeritus	Institutional	First Member	Each Additional
ARIZONA	$ 43.00	$ 22.00	$ 64.00	$ 30.00	$203.00	$43.00	23.00
CALIFORNIA	43.00	21.00	63.00	30.00	203.00	43.00	23.00
COLORADO	42.00	22.00	62.00	29.00	202.00	42.00	22.00
IDAHO	42.00	22.00	62.00	29.00	202.00	42.00	22.00
KANSAS-OKLAHOMA	43.00	22.00	62.00	29.00	203.00	43.00	23.00
MEXICO	44.00	24.00	64.00	31.00	204.00	44.00	24.00
NEBRASKA	44.00	22.00	64.00	31.00	204.00	44.00	24.00
NEVADA	42.00	22.00	62.00	29.00	202.00	42.00	22.00
NEW MEXICO	42.00	21.00	62.00	29.00	202.00	42.00	22.00
NORTHERN GREAT PLAINS	43.00	23.00	63.00	30.00	203.00	43.00	23.00
INTERNATIONAL MNTN	43.00	23.00	63.00	30.00	203.00	43.00	23.00
PACIFIC NORTHWEST	43.00	23.00	63.00	30.00	203.00	43.00	23.00
SOUTH DAKOTA	44.00	23.00	63.00	30.00	204.00	44.00	24.00
SOUTHERN	45.00	25.00	65.00	32.00	205.00	45.00	25.00
FLORIDA	45.00	25.00	65.00	32.00	205.00	45.00	25.00
TEXAS	43.00	21.50	63.00	30.00	203.00	43.00	23.00
UTAH	43.00	23.00	63.00	30.00	203.00	43.00	23.00
WYOMING	43.00	22.00	63.00	30.00	203.00	43.00	23.00
NATIONAL CAPITAL	42.00	22.00	62.00	29.00	202.00	42.00	22.00
NORTH CENTRAL	42.00	22.00	62.00	29.00	202.00	42.00	22.00
UNSECTIONED	40.00	20.00	60.00	27.00	200.00	40.00	20.00

LIFE MEMBERSHIP—600.00 (INSTALLMENT PLAN—200 EACH YEAR + REGULAR DUES FOR 3 YEARS)

1982 Summer Meeting