ranches along Wyoming's Powder River, for example.

Some stockmen diversified rangeland use by grazing sheep instead of cattle. By 1900, the number of sheep had greatly surpassed cattle populations on the northern Plains (Table 2).

Finally, advances in range management, then called plant and animal husbandry, followed the creation of land grant universities throughout the West. At times progress was slow or setbacks, such as the introduction of undesirable annuals and noxious weeds from foreign countries, would occur. Nonetheless, the range livestock business has come a long way since that calamitous winter of one hundred years ago.

Joe Gilchrist Remembers Ranching 60 Years Ago in Western Canada's "Short-grass Country"

Sherm Ewing

The early morning sun shines through broken clouds and brightens the hill tops; in the valley, smoke curls up and the smell of bacon fills the air. Scattered around the meadow—still soggy from yesterday's hail storm—tents and trailers stir with life as 200 campers begin rolling out for the final day of the 1986 International Mountain Section summer tour. Ed Nelson, looking up from an enormous bowl of pancake batter, notices a car fish-tailing down the steep trail into the campground.

"Here come Joe and Muriel," says Ed.

"Yep; it must be morning," says Dan McKinnon, as he dumps a can of coffee into a large pot. "It don't take those Gilchrists long to spend the night."

As the old folks walk across the meadow from their car, son Tom and his wife Lois emerge damp and shivering from their old, patched, straight-walled roundup tent. Grandsons Keith and Neal—twin teenagers—groan comfortably in their yellow nylon, back-packer special, thinking of breakfast. Three generations of Gilchrists aren't that unusual on IMS campouts; other families have attended for decades. Often the older generations elects to "camp" at a motel in the nearest town as Joe and Muriel have done.

Joe, watching family and friends crawl from tents to form a breakfast line, says: "It took me 40 years to get to where I don't HAVE to sleep on the ground."

Joe Gilchrist joined the American Society of Range Management—now SRM—in the early 1950s. Years earlier—before our Society was born—he and his brothers Rube, Chay, and Sandy sold out their Gilchrist Brothers ranching operation built from original homesteads near Maple Creek, Saskatchewan, over a period of 30 years... years that included the terrible drouths and tough winters of the late 'teens, and the tragic decade of the "Dirty Thirties". Born on the second day of the century, by 1914 Joe had joined his older brothers as a full working partner in a ranching enterprise that by 1945 included 7 well-equipped, feed-producing, deeded ranches, and hundreds of thousands of acres of "crown" grazing lease just north of the International Boundary.

What we now call "open range" was certainly a thing of the past: the Border was fenced, the railroads were fenced, some areas of cropland were fenced; but in the short-grass country of western Canada, pastures were still very, very large. Gilchrist Brothers ran their cattle on range that stretched from White Mud or Frenchman Creek, south of the Cypress Hills in southwest Saskatchewan, to Deer Creek, north of the Sweetgrass Hills in southeast Alberta.

I asked Dr. Alex Johnston, Historian—Range Specialist at CDA Research Station, Lethbridge, for 40 years—to describe the area we know in Canada as the "short-grass country."

"It's classed as mixed prairie," he said. "The term 'short-grass country' is pretty much a misnomer. Dominance of real short-grasses such as blue grama, in that area, is pretty much the result of severe overgrazing.

"What these environmentalists can't get through their thick skulls," Johnston continued, "is that severe overgrazing is what caused the short-grass name and reputation. And when they see the large grasses come in, they think, 'Oh, geez, these ranchers don't know what they're doin.'

"The grasses that dominate, generally speaking, across that whole vast tract, are *Stipa comata*—spear grass, needle-and-thread—june grass, Sandberg's bluegrass, and blue grama. In certain areas, with heavier soils, the wheatgrasses would be fairly important—mostly western wheatgrass, *Agropyron smithii,* and that sort of thing, you know.

"Most of the soil is glaciated, but a long time ago... not in the more recent glaciations. It's like the Montana situation:

Editor's Note: This article shows that the early ranching days were not all the fun that is shown on TV and the movies. These thoughts and recollections of our past should never be forgotten. They form the basis of our present ranching industry. Without people such as Joe Gilchrist, the 'West' would not have been settled.

the area was subjected to huge outwashes... floods of water. Of course, like all glacial tills, there's a fair amount of hardpan, and a fair amount of alkali. It'd be fair to call that whole country from the Frenchman to the Deer Creek a 12" to 14" rainfall area."

I asked Dr. Johnston his opinion as to the history of overgrazing that had given that range its common name.

"I think," he said "that it was pretty well eaten out—kept in a 'shortgrass' condition—by the buffalo. They summered there traditionally, and buffalo can apparently travel a long distance to water—maybe 15 or 20 miles.

"My personal opinion," he continued, "is that the rangeland in that area—certainly the bigger chunks of rangeland—is in better shape today than it was in the buffalo days.

If that is so, the Gilchrist family can claim lots of credit. Mac Forbes—longtime SRM member, onetime grassroots lease inspector, current A.D.M. of Alberta's Public Lands Division—dug out old files. He found a Dominion Lands Branch report dated 1928 officially citing "the cooperation of Gilchrist Brothers in studying the desirability and comparative feeding values of range grasses and grazing problems." When the Manyberries Range Experiment Station was set up in 1927, a township or so was carved out of Gilchrist summer range, and for several years the brothers furnished the livestock used in grazing studies, and managed and wintered them.

Between 1926 and 1944, Gilchrists leased up to 200,000 acres of public grazing land in Alberta alone. The official annual carrying capacity ranged from 30 acres to 160 acres per head. The average rental rate appears to have averaged 2 cents per acre per year during the period, and—where appropriate—the lessee paid local taxes directly to municipalities or school districts.

Joe has written down some "Things I Remember" about ranching in those times. He recalls the first 25 cows his dad bought after he came to Saskatchewan from Nova Scotia in 1904; he remembers minute details of a homesteader boyhood and teenage years helping older brothers build a business. 1927 is a year he remembers especially well: let's see what ranching was like 60 years ago.

Joe Remembers:

"By July of 1926 we had over 3,000 cattle. It had been a very dry spring and we were very short of grass, so Rube and Sandy made a deal to buy about 6 townships of a neighboring lease which was being closed out: it was eaten bare, all except the Lower Spencer place on Milk River in Alberta.

"In April of 1927 we moved west with over 1,700 cows to calve, plus yearlings. It was about a 75-mile drive, and as creeks were fairly high, trailing wasn't the best. We crossed Battle Creek on the ice which hadn't broken up. Then we crossed Willow Creek just below George Griffith's ranch. The water would swim a cow but not a horse, and it was really fast. We had to put the cattle in at a certain place, so when the current swept them down stream, they would land where they could get out. It was a windy, cloudy day and about 40° above; Art Rotnem was guiding the cattle into the creek, with his horse getting very restless. He was pawing and backing around and finally fell backwards into the creek: horse and rider went right out of sight in the water—there will be more about Art later. To get our camp wagon across, we tied the box down so it wouldn't float off. I had a big saddle horse, so I put my rope on the end of the wagon tongue and managed to keep the outfit from being washed downstream. We set up camp for the night about 4 miles from the crossing.

"About seven o'clock it started to snow, and the wind turned to the northwest. I guess Chay smelled trouble in the air, so we went out

The Gilchrist brothers (left to right): Sandy, Joe, Rube, Jack (with no horse), and Chester (Chay). The picture was taken on October 1st, 1912, at the ranch 5 miles north of Consul, Saskatchewan, by an aunt visiting from Nova Scotia. The camera was the first Joe ever saw.

and put the cattle across a watercourse that was still running a little. Some of the holes had ten feet of water in them and the creek was very crooked. We got the cattle across about dark and were lucky we put them on the south side, as that night it turned into a bad storm.

"The cattle drifted about two miles and hit a fence; they piled up against it until the snow built up and they got over it. It was a good four-wire fence. The storm let up about four o'clock in the morning; the cattle had drifted another several miles, but didn't strike any place to get into trouble. We lost about 20 head before they broke down that fence. We had turned our horses loose, except for one that had been out all winter; we had saddled him and opened up the the saddle blanket over his rump, and tied him in the lee of the wagon for the night.

"In the morning, Chay hollered at Art to get up and dry out some 'dough-gods'. Art was the man who fell into the creek, and his clothes were wet when he went to bed, so he had taken his long Stanfield underwear and tucked the neck over the ridgepole of the tent. As it turned quite cold that night, the underwear froze stiff. Art looked up, saw the frozen underwear and said, 'I'm not gettin' up first this morning, Chay!'

"I got up, took a plate, and shovelled the snow off the beds, where it had drifted in through a couple of small holes in the tent. I got the fire going and thawed out Art's clothes. He did a lot of cussing while putting on those wet clothes and swore he would never work for Gilchrist Brothers again, but when he warmed up he forgot all about it. Art worked for us for several years after that.

"In the next couple of days, we got our cattle over to Sage Creek and turned them loose; it rained a lot that summer, and the cattle did very well. It seems we always worked short-handed and on this drive, there were just 4 of us. Art drove the wagon and did the cooking, and 3 of us trailed 25 head of saddle horses along with the cattle. Seventeen hundred cattle made a fair-sized bunch to handle.

"During May and June, I hired a couple of men and we fixed a lot of fence. We helped Chay move the cattle out of the Lower Spencer, as some of our cattle had got mixed with the Ross cattle on the south side of the river. We spent several days gathering them—working with Ross's men. We had picked up 50 or 60 head and had to cross Milk River to get them home. As it had rained a lot, the river was high; the cattle crossed without much trouble, but Chay and I sure got wet, as the horses had to swim.

"About the middle of June, we started to work the cattle. First, we branded about 800 calves, then we had to dip everything for mange. It is almost impossible to brand a calf that's been dipped, as the hair is full of lime and sulphur. As cattle had to be dipped twice, 10 days apart, it made a lot of work. We had the only dipping vat in that part of the country, and many of the neighbors used it, too.

"With calves branded and the dipping done, it was time to think about winter. We had always had a backlog of hay in Saskatchewan; now we decided to do something about it in Alberta, so we rented the -N- Ranch, south of Manyberries, from P.A. Yeast Sr. It had a very good hay meadow with a good hay crop, as it had rained a lot that summer.

"There we were: twelve hundred tons of hay to put up, and no haying outfit. It was all done by horse power then. We used 5 horse mowers, dump rakes, bull rakes, and an over-shot stacker; that was the most efficient way, at that time. Chay moved his family from the river to the -N- Ranch and got settled there. As Sandy had finished haying at the White Mud, he loaded the haying outfit on 2 flat-cars at Vidora and sent a man to trail the work horses to the -N-. I moved there too, to help Chay get the hay job started; it was now about the first of September. We rented a cook-car and a bunk-car near Manyberries, hired a cook, and were ready for business. Putting together a hay outfit, which someone else had taken apart, was quite a job, and I had that mess to straighten out: there were about 15 sets of harness and 40 horse-collars.

"We hired 10 or 12 men and made a start on the hay. Everything went fine for a few days. It was now about the tenth of September and Chay stayed with the haying outfit, while I took some of the men to gather the beef; we put them in the Bain Field, ready to sell. When I got back to the hay job, we only got in a few days before it started to rain. The rain lasted 4 or 5 days; then we started in haying again for a few days. After that came several inches of snow, topped off with a hard frost. When things finally dried out, we started up again and wound up with about 600 tons of hay stacked and a lot of good grazing on the hay flat.

"Bert Ingram and Johnnie Chourrout had started to work for us by that time, so Bert, Johnnie, and I went over to the White Mud Ranch with several horses, bed rolls, and a pan or two, to bring back 400 yearling steers. Everything was going fine until we camped on Battle Creek, about 3 miles north of Consul. We had to night herd the cattle and horses; Johnnie was out with the cattle, while Bert and I were gathering up the beds and our few pans. We had one horse packed and were putting a bedroll on the other, which wasn't too gentle; we had just got the bed on him, and the straps about half-tightened, when he pulled away, bucked over a small cutbank, and fell into 4 feet of water. When he finally came out of the creek, the bed was under his belly; Bert was on his horse and roped him before he tore the wet bed all to pieces. Johnnie always had a neat bedroll, with good bed-straps; you can imagine what he said when he saw that wet outfit. He was another who threatened to quit such a haywire outfit—couldn't even afford a camp wagon—as soon as we got back to the ranch. But when the sun warmed him up, he forgot all about it and was with us for several years; he was a top hand at any job.

"We turned the steers loose in what we called the Webster Township, which we had acquired a short time before. November first was a fine sunny day when Chay and I rode from the -N- down to the Lower Spencer to dig a few potatoes Chay had planted in the spring; we dug 3 or 4 sacks and put them in a hole under the shack. Next morning there was 6 inches of snow and it was about 10 above zero.

"Bert and I rode over to the Black Tail place, where we were going to camp while we weaned the calves. It had been snowing and getting colder; we didn't have a truck, which was a good thing as the snow was too deep. There were 2 things in our favor: it had rained a lot that summer so that grass was good, and we had a bunch of good saddle horses. We planned to wean the calves at the dipping vat corrals, about 5 miles north of the Black Tail place where there was a good house; but to save time, we decided to move the camp outfit to the vat, where there was an old shack and stove. The shack had just one-ply of boards, and it was soon down to 20 below at night, with a foot and a half of snow.

"We stuck it out in this shack until we had the cattle gathered and the dry stuff worked out and turned down to the River Field. Then we gathered the cows and calves and corraled them late one afternoon. We gathered up our camp, loaded it into the wagon, and went back to the warm house at the Black Tail. As we had no hay to feed the calves after they were cut off from the cows, all we could do was keep the cows in the corral, let the calves out to graze, and then reverse the operation. We did this for 3 days. On the fourth day, we got up earlier than usual to move the calves to the Q Ranch, which we didn't own at that time; Ilaf Wallace had it, and he had put up some hay there that summer. Speedy Jim and his wife were living there. The sun came up bright that morning, and the snow lay just as it had fallen; you could catch a coyote on horseback, if you weren't afraid of the badger holes.

"We got the cows that were left around the corrals pushed off a ways; then let the calves out. We had over 700 calves in the bunch, which makes a fair herd. Everything was going fine: calves were hungry and easily handled and were about 2 miles from the vat when a couple of cows turned up from some place; the calves broke back, and we had to corral them over again. By then it was dark, so we went back to the Black Tail.

"Next morning we started out again, packing a couple of beds on 2 horses and taking along 7 or 8 loose horses; Joe Chourrout was to take them to the Q. We let the calves out and made it to the Q without any trouble, but no Joe or beds or horses were there; he didn't know the country, got lost, and didn't get in til after dark.

"Next day, Chay and Joe started back to the Black Tail, picked up fresh horses and a bed, and moved the yearlings up to the -N-. I don't know how much trouble they had, but they finally got there.

"That day, at the Q, we fed the calves a couple of loads of hay and they settled down well; the next morning Bert, Johnnie, and I started them for Altawan—about 20 miles distant. It was a nice day, but 20 below zero with a foot and a half of snow. We had 2 bed horses and some loose horses, and the lady at the Q made us a lunch. We got the calves started, reached Heydlauff Lake—about 6 miles—by noon, ate our lunch, changed horses and started out again. We picked up

about 30 head of dry cattle that belonged near Altawan; they wanted to go home, so they broke a good trail through the snow. We got to George Griffith's ranch at two o'clock in the morning. We rested the calves in a field near the railroad where there was a lot of sage brush, so the calves filled up a little. Bert and Johnnie watched them as it was a fairly big field, and we didn't want them to spread out too far.

"I got a good strong, fresh horse from George and rode to Govenlock to order a train to move the calves to Vidora. The train was supposed to get to Altawan about four o'clock in the afternoon and we had everything ready to load, but it didn't arrive until nine o'clock. The trainmen helped us load the calves and the 3 saddle horses, which were put in a car with the calves; in all, we had 15 carloads and arrived at Vidora at five o'clock in the morning. As Vidora had just a small stockyard with one loading chute, it took a long time to unload; then we had to turn the calves out, as the pens weren't large enough to hold them all. My Mother and Dad were living at Vidora at that time; they had a small barn and some horse feed, so the horses were well taken care of while we had a good breakfast.

"Then we picked up the calves and started for the White Mud Ranch—about 10 miles. With a foot and a half of snow, it was tough going, so we didn't get to the field until midnight; we had had no dinner, so we gulped down our feed like a couple of coyotes and went to bed for a short time. Then Sandy woke us, loaded our saddles in a sleigh, and took us to Vidora to catch the train back to Altawan; we got there about ten that night. We left our saddles at the stockyards and walked about 3 miles to the Griffith's ranch through the deep snow.

"Next morning we got our horses—left at Griffith's—put the beds on a couple of them, rode up to the stockyards bareback, picked up our saddles, and rode out to the +Z (Cross Zee); that took all day. Two things I remember about that day: how sore my tongue got after getting a pipe and a sack of Old Chum tobacco, and also I lost a pair of pliers.

"After all the trailing and shipping calves to Vidora, and then trailing to the White Mud, we didn't have a sick calf. Try handling a bunch of calves like that today and see what happens.

"We got to the +Z after dark; no one was living there, grub was scarce, but there was lots of horse feed. I went to the house, got a fire started and looked for something to eat. I found some macaroni that the mice had been in, and a little coffee and part of a wax candle; so I boiled up some macaroni, made some coffee in a can, and that was our supper. As we had no dinner, it tasted good. We had the same fare for breakfast with one exception: I knocked the candle stub into the coffee—boiling in the can— and as we had no light and couldn't see the melted wax, the first one to try it burned his mouth.

"That morning there was a blizzard blowing and it was quite cold. We took our horses and beds to the Lower Spencer that day; there was a good camp there, and lots of grub. Johnnie and I stayed there until spring.

All Gilchrist Brothers cattle carried $\overline{X}$ on the right hip and Joe remembers: "Chay used to cuss that right-hip brand when he was heeling calves at branding." When they closed out their operation in 1945, they sold over 11,000 head of cattle, 6,000 sheep, and 100 saddle horses and about 100 mares and colts.

And most important: they left the range to the next generation in better shape then they found it.

After breakfast, IMS holds a short business meeting around the campfire: youth programs, range plant contests, awards, weed control, lobbying, future meetings. Tom and Lois Gilchrist, Keith and Neal, are in the center... listening... contributing. Rangeland—part of that same $\overline{X}$ range, as a matter of fact—is their future.

Joe Gilchrist—sitting attentively—misses nothing. "I've belonged to this outfit for over 35 years," he says, "and everything it does is fine by me. But, I guess the most important thing these days is meetin' old friends and visitin'. I love to visit!"

Beef Cow Size and Productive Efficiency

L.M. Rode and D.M. Bowden

A frequent question asked by cattlemen is "What is the most efficient cow size for beef-calf production?" Large cows require more feed than small cows but they also produce larger calves at weaning. Beef producers need to know which size of cow will be most efficient at converting feed into calves.

At the Lethbridge Research Station, a long-term experiment was conducted to determine the relationship between cow size and efficiency of calf production. Simmental × Angus (SA), Charolais × Angus (CA), Hereford × Angus (HA), and Jersey × Angus (JA) cows were used to provide a range in mature body size and milk production. The average weight (kg) of cows was 482, 494, 463, and 420 for SA, CA, HA, and JA crosses, respectively. Feed intake and milk production of cows were measured from the birth of their first calf until the weaning of their fourth calf. Cows were bred to Red Poll and Brown Swiss bulls.

The authors are with Research Station, Agriculture Canada, Lethbridge, Alberta, Canada T1J 4B1.

Simmental- and Charolais-cross cows produced heavier calves at birth and at weaning but consumed more feed than Hereford-and Jersey-cross cows. As a result, all breeds of cows required the same amount of digestible energy per kilogram of calf weaned (33 Mcal). Therefore, size of cow had no effect on the efficiency with which it converted feed into weaned calves.

The efficiency of production could be improved if smaller type cows were bred to relatively large bulls but this increases the risk of calving difficulty. Also, heavier cows have a greater salvage value when culled, which partially offsets the higher maintenance cost of these animals. Changes in the cost of feed and price of calves will affect profitability. Relatively low cost of feed and price of calves will affect profitability. Relatively low feed costs or high calf prices will favor large cows with large calves, whereas high feed cost and low calf prices will favor small cows.