

with thick ice of a foot or more in thickness and have no other means, we cut a hole in the ice and pack it full of snow, the water will rise to the surface of the snow though it be higher than the ice, by what is called the attraction of prosity. In the same way water will rise from a ditch into the roadbed to a considerable distance above its level in the ditch, which will be higher or lower according to the looseness or compactness of the soil, unless in perfectly pure clay, which does not exist as soil or subsoil in our Province, and through which water will not pass, the more compact the soil the higher water will rise. In the case of gravel or sand which is too open, it will not rise above its level. Therefore, in all clay loams which is the general character of what we call clay, so long as water is allowed to come within two feet of the surface of the road we cannot have a dry road, unless the sun and wind should carry it off in evaporation as fast as it comes to the surface; but let the weather get damp, the air charged with vapor so that evaporation will cease, and the surface will at once get wet, cut in ruts and become permanently spoiled. To illustrate how water rises through the soil, the following simple experiment will be quite instructive. Select two pieces of perfectly straight window glass, say two or three inches square, wash them clean so that no oil or grease spots may be on them, then dip in clean water and let it drip all off; next place the pieces flat over each other, grasp firmly between the finger and thumb near the middle of one side, and between the pieces at the opposite side place a piece of shaving, or two or three folds of paper about a line or less in thickness to keep the pieces of glass apart; now, you have a set of pores larger at the side where the pieces of glass are separated and smaller where they are held closer together. If you will now set the glasses perpendicularly in clean water so that the part held and that where the shaving is may be nearly horizontal and not touch the water, the water will rise between the glass in a parabolic arch, high at the side held close together where the space is small and low where the space is larger, by exactly the same law as water rises from a ditch to the surface of the road. If a little coloring matter be infused in the water the experiment will be more beautiful.

If two pairs of pieces thus arranged and placed edge to edge so that the open spaces be at the outside, it will afford a very good similitude to the porosity of our roads and how water rises through them since the tramping and pressure has made them solidier in the centre while they are opener towards the sides. Some may be disposed to think that our ground is not so porous and that water may not rise in the way here illustrated, but such is the fact. Our most solid roads become porous if allowed to get wet and dry. All clay soil swells by wetting and shrinks by drying, as this shrinkage does not shorten the road or make it narrower, it opens little pores in it, small, it is true, but large enough to take up and hold water. Every one who has any experience in setting fence posts knows that, after planting the post, there will be scarcely earth enough to pack around it, even should they be set in a tolerably solid road, yet we do not

get the clay around the post quite solid.

After a good outlet and good drainage the next important point is to keep the road rounded slightly on the top, so that rain may run off to the sides, and where clay has been banked on each side of the gravel and prevents the water from running off, or when the wheels have cut ruts to hold water, little narrow channels should be cut from the rut to the ditch to let the water run to the ditch, since water and friction are the two powerful agents to reduce gravel to powder and spoil a road. So well do stone cutters know this that with a small flow of water and a piece of hoop iron, they will saw across the largest block of stone. Where gravel roads are already in tolerably good repair, but undrained, rather than cover the gravel with clay, the clay from the ditch thrown towards the fence, leveled and seeded down, would make a convenient sidewalk in wet weather. In many sections road beds are made too wide, and in consequence soon become flat and hard to keep in repair. Where over eighteen feet wide the sooner they are narrowed the better. In the selection of gravel, that which has clay amongst it makes a better and more durable road than either screened gravel or gravel mixed with sand, as the clay soon makes a bond and prevents the stones from wearing each other, which they would do if screened or mixed with sand.

Chatty Letter from the States.

[FROM OUR OWN CORRESPONDENT.]

Receipts of cattle at Chicago for the year 1883 show an increase of some 300,000 head over the previous year, making a grand total of about 1,870,000 head of cattle. Counting the 310 working days, the daily average receipts were about 6,000 head. This is something entirely unprecedented, and stands on record as the largest receipts of cattle ever known. There is one feature about these figures which is of peculiar interest, namely, the fact that the receipts of range cattle during the year show a decrease of more than 100,000 head, as compared with 1882. This shows that while there was a large increase in the total receipts it was not from the ranches of the west, but from the various feeding sections of the country, showing that while there was a marked increase in numbers there was also an increase in weight. Of hogs, the receipts were about the same as in 1882, but the average weight of the stock was about 10 lbs. per head heavier. Receipts of sheep were about 150,000, heavier than in 1882. There was nothing more striking in the lessons of the year now closed than the great progress achieved in the matter of early maturity. In former years, aged, over-mature stock was the rule, whereas of late that kind has been the exception. There were many 1,800 to 2,000-lb. beeves sent on for Christmas, which were three and four years and older, but the great bulk of the good, useful cattle came to market under three years. There were more 1,150 to 1,200-lb. yearlings than 1,800 to 2,000-lb. four-year-olds. Of course, it is not wise to go to either extreme, and it is as foolish and unprofitable to market cattle that are very immature as to send to the shambles animals that have long passed their best time.

Recently a car lot of 1,553-lb. Galloway steers sold at Chicago for \$8.25, the top price

paid for Christmas beef. They were two-year olds, and presented a good appearance. Some selected two-year-old Shorthorns sold at the same price. The celebrated Hereford bull Grove 3rd, sire of Rudolph, which was bought in England by O. M. Culbertson, of Chicago, for about \$4,000, was at Chicago recently. This famous bull is nine years old. The price paid seems like a foolish one, in view of all the facts. Of course, if he should get a couple of bull calves like Rudolph, he would abundantly pay for himself, but such high prices for such old bulls are more apt to be for advertising purposes than anything else. As I said last month, Hereford cattle are too high. There is no sense in the foolish prices that are being paid in many cases. At the present time, yearling bull calves by Hereford bulls, out of common or Shorthorn cows are selling to western ranchmen at \$75 per head. Are they worth it? Better Shorthorns are selling at \$40 to \$50 per head. The Herefords are very scarce as compared with the Shorthorns, and as importing them is expensive business, they sell at high figures; but I repeat the question, are Hereford cattle worth the prices they are bringing? As time goes on the ranchmen of the west will demand a much better quality of bulls than they are getting. Many quarter-bloods have been palmed off as being out of thoroughbred sires. As soon as the demand is fairly supplied, buyers will be more exacting, and many of them will have more experience. It is said that the best cross that can be made to put on Texas and western cattle is a bull from a thoroughbred Hereford sire and Shorthorn dam.

Cattle are selling fully as high as they did one year ago, but there is much less activity in range stocks than then. It is said that nobody is willing to pay what ranchmen ask for cattle and grazing lands, while they are not willing as yet to make any material reductions. The deficit of 100,000 Texas cattle this year as compared with last is largely owing to the fact the cattle were marketed too closely last year, but also to the fact that many ranchmen came to the conclusion that they had better hold till next spring, and come in on early markets, than to accept the prices which were obtainable this fall. They have confidence in good prices next spring. On the other hand, in Texas there is little or no disposition to make contracts for cattle to put on the spring drive for northern markets and northern ranges. The railroads have cut into that business heavily, but at the same time it is evident that people are afraid to buy liberally for next year at current asking rates.

There has been a remarkable increase in the sheep business lately. Americans are getting to be extensive mutton eaters, only they have not been getting very much mutton fit to be called such. The average American shepherd appears to think that wool is the only end of sheep.

A sprinkling of air-slaked lime is the best preventive of rot in potatoes. It absorbs the excess of moisture, and when the diseased part dries up decay ceases. Of course the sound tubers should be separated as quickly as possible from those in which disease has made its appearance.