will allow you to hold him with a tolerably short strap without flying back, commence by pulling him very quietly to one side, then step up to him and caress him, and pull him again, and keep repeating this operation until you can lead him all around the stable.

After a few lessons of this kind in the stable you can lead him out of doors, catching hold of the halter close to the jaw with the left hand, the right resting on top of the neck, holding his mane. Have no one else around to attract his attention or to scare him. In hitching him have a tolerably wide stall, but not too long, or have a bar behind him so he cannot get far enough back to have a straight pull on the halter. To accustom him to the bit it is well to have a smooth snaffle bit, attached to the head-stall of the bridle, without reins to it, and let him stand or run loose in the stable or shed for some time until he becomes a little accustomed to the bit. If you want to saddle him tie each stirrup strap into a loose knot, so as to shorten them, then double up the skirts and take the saddle under the right arm and let him smell and feel it with his nose. Then let the skirts loose and rub it very gently along his neck, each time getting a little farther backward, until finally slip it over his shoulders, on his back, shake it a little, and rattle it with the hand, and in a short time you can pull it off and throw it on again without his minding it. In mounting him have a block a foot or 18 inches high along side of him. Gradually raise yourself on this block, and now you are about as high as you would be when mounted, and you can gradually place your weight on the saddle without a spring or much change of position to frighten the colt.

In harnessing the colt go through the same process as you did in putting the saddle on him. Walk him around a little, then put the lines on him, take him out and put him alongside of a gentle horse, and drive them around a while until he becomes accustomed to the harness. They can then both be hitched to a light sled or wagon, but as the colt of course knows nothing about pulling on the collar, this is a new sensation. A very good plan to accustom it to the collar is to have a pulley fixed behind it in the stable. Have a rope through this pulley, with a weight to it, and hitch the colt to it. At first you can take hold of the rope and pull back on it, alternately backing the colt and stepping it up the length of the stall. A few lessons of this kind are a great help in getting it used to pulling, because you have it in your power to *make him pull* before he can get up to his manger, and you have nothing about him to frighten him.

Some, however, will say there is no use to go to all this trouble. Hitch him up at once and "break him" into it. Well, yes—if you want to "break" him you can do so. But if you want to *train* him, unless you have patience, kindness, and firmness in an abundant degree you had better let somebody else train him.

T. S. STROHACKER.

Venango county, Pa.

For the National Stockman and Farmer.

FOOD AND FUEL.

How shall we properly impress upon or reach the understanding of—I will not say all farmers, but many of our farmers—of the (to say nothing of the humanity) *economy of comfort* in housing stock of all kinds, whether cattle, horses, sheep, swine, or any domestic creature. I am not a farmer in the proper sense of the word at present, nor have I been for many years last past, but my boyhood was spent in farming pursuits. I take great pleasure in having contact with farmers, and no one takes a more lively interest than I in looking over a farm and around the barn-yard, and in inspecting the facilities for humane and consequentl economical wintering of stock of various kinds, and have in such cases often found farmers that dsd well in this line, who could not give the philosophy of the economy of comfort in the wintering of domestic creatures, and I think a few lectures in the school houses on this topic would bring forth much good fruit, as I feel certain that that very sensitive nerve called the pocket nerve would be so touched that it would make many people stare.

There are thousands who cannot give the philosophy or reasons why all living creatures eat more in the cold than in the warm portions of the year, yet they all know this to be an uncontrovertable fact. Yet they appear to stop just here. They know it, and that is the end of it; whereas just then is where they should commence to investigate, as it is an axiom in medical jurisprudence that when a disease is once correctly diagnosed, it is more than half cured.

Then why do cattle need and consume more food in the winter than in the summer season? If a boiler for the production of steam be placed in the open air, without some shield or house around it, and left where the wind can blow over and around it, no one will doubt the fact that it will require a greater percentum of fuel to raise the necessary steam to produce the same power, than in a boiler of exactly the same size encased in a non-conducting jacket of wood or felting, and enclosed in a warm building. Now I might compare the jacket around the boiler to a good horse blanket on your horse, and the boiler house to the stable, be it horse, cattle, sheep or swine. The furnace to the boiler stands exactly in the same relation that an animal's stomach does to the animal. The food is the fuel and the object of the fuel is to get heat and force. Cattle fed in the open air, or in cold stables, are like the boiler unprotected, whilst cattle in a warm, dry and comfortable stable are like the boiler protected from the cold currents. In short it is a question of heat—digestion of food in the stomach is but a process of burning up the contents, and thereby evolving heat. It therefore logically follows that to waste heat is to waste food. Surely this is very simple, and I feel certain very truthful.

It has been said that "knowledge is power." I will paraphrase by saying that "knowledge is profit," provided knowledge is put to *practical* use in such a case as this. The same amount and kind of food will at all seasons produce the same amount of heat and nutrition, if fed under similar conditions. But this we know to not be the fact as a rule, and that while one farmer's stock stands shivering in the wind, and perhaps with a poultice of cold mud and filth to their feet, and often pick up their "fodder" in the barn-yard, another farmer's cattle stand dry-shod in well protected stalls and free from the winter winds. Look at these animals in the spring, and see the difference in their condition, and difference in the market value! and ask yourselves if it does not pay to be humane to these domestic animals.

Whilst my illustration has been with kine, I intend no exception in their favor—horses, sheep or swine come within the grade of this inexorable rule, *i. e., that the loss of heat is the loss of food*—keep your stock comfortably housed if you wish to winter them both well and economically. Who does not?

GEO. FINLEY.

Pittsburgh, Pa.

For the National Stockman and Farmer.

HANDLING THE BULL.

In your issue of December 9th I saw an article taken from the London *Agricultural Gazette* that attracted my attention. It was entitled "Exercising House-fed Cattle." The article was prefaced with a note saying, "Many of our American cattlemen would consider it as drawing it pretty fine." I have never had any experience in feeding cattle, therefore I do not know the amount of exercise necessary for their well being; but I have exercised bulls, and I know that it is practicable and to some extent necessary, especially so with the Jerseys. I have a registered Jersey bull that will be three years old in April, that if it was not for the exercise I give him twice a week I could not do anything with him. As it is he is very docile, running in the yard with the cows all the time and not showing any signs of being wicked.

The London journal says to put a staff on the animal and take it out on the road and walk it for a few miles. That seems to me to be both dangerous and unnecessary walking for nothing—dangerous on account of being in the road, not to the bull but to the public, and unnecessary walking, because if you have a horse power or tread mill let him walk that and shell your corn and cut your fodder and hay. While he would be walking four or five miles on the road you can have him much better employed, at the same time taking the place of a horse on the power. I have used my bull for this purpose for the past four years, and I can truthfully say that my bulls have been better, not only in behavior, but have got better calves since I began working them. My plan is to take them when small, and learn them to lead, not only around the stable, but take them up on the barn floor and try and coax them to walk up into the power. If they will not coax, get your men and lift them in. But I never had any trouble after I got them thoroughly broken to lead. They would come for a little corn. After you get them in put a cow chain around their necks and ease the brake a little. If the bull is not inclined to walk up when he rides down, show him an ear of corn, and try and induce him to walk. Should he not want to be persuaded with corn, get a little switch and try the other end of him. He will gradually come to it. That is his first lesson when he is four months old; therefore if he does run it nicely do not leave him on long at a time, for it will tire him, and he may remember it the next time you go to put him on, and be stubborn. Now if you have him well broken you will have no trouble in getting him out.

When you are teaching him to lead you should also learn him to back at your command. Should you neglect this you will be bothered more or less every time you go to take him off. After he has had a few lessons if he is heavy enough you can go to shelling corn with him, and if this is in the spring (as I always try to have it), by the time you want to cut your feed in the fall he will be 200 pounds heavier—more able to stand it. You would be surprised at the amount of speed a bull can carry on a horse power. But let me caution you not to run him too long, as he is not built like a horse and can not run as long at a time.

I have never broken a large bull myself, but one of my neighbors has. He had very little trouble with him after he got him so that he could lead him. After your bull gets to be a year old put a ring in his nose, as it is the safest and handiest way to handle him.

Now, brother farmers, should you try your bulls on the power do not be discouraged if you find them obstinate for a time or two, for it is their nature to be so; but after you have conquered them and they are your slaves you will wonder why you never thought of that before. The bull will not have time to get any evil thoughts in his head, and consequently he is more like a bull than a beast.

J. H. M.

Delaware county, Pa.

For the National Stockman and Farmer.

A MATTER OF COMMENT.

In your December 23d number there are two articles which require comment, especially from one who has long been a sheep breeder.

First, in regard to reliable breeders. Many persons will write to me that my prices are too high, and will say that A. will furnish sheep cheaper. Then I tell them to go and buy of A., which they generally do. What is this but hunting out the meanest sheep on which to found a flock? There are of course many fraudulent breeders with false records, and impure stock, and those who simply seek the cheapest sheep will be sure to find them.

But the disgust of farmers with blooded or pure stock comes more often of the habit of buying a thoroughbred animal and then using that male's get upon the mongrel flock of ewes. Of course the mixed blooded bucks will breed downwards toward the ewe type, instead of up to a higher grade. This is as plain as that two and two make four—and yet how many can see it? The way, then, to bring up a poor breed of live stock is to have always a thoroughbred male. But, after all, it is best to have the male and female both thoroughbred.

Again, the Committee of the National Academy of Sciences says, on page 501: "All the mutton breeds of sheep are coarse wooled." This is a grand mistake for learned men to make! The Southdown is the best mutton sheep in the world, and yet the wool is the next in fieneness to the two varieties of the Merino—the ordinary Merino and the Saxon. I have sent you of old specimens of my Southdown wool, and none but an expert can tell it from Merino wool. I venture to say that it will fill any manufacture that the Merino wool can fill. Indeed I have long bred for finness as well as mutton, and my wool goes never abroad but is bought by Lexington manufacturers at five cents a pound generally over the coarse wools of my State.

Such fallacies are astonishing, but the reason is obvious. Most agricultural journals seem to think that all eclectic papers should be rejected, and confine themselves to their own special writers! Such a course makes progress almost impossible. For that reason, though once writing for agricultural journals with interest, I have ceased to do so longer—since what light I could shed on the progress of this great science and art is hid under a bushel, and at times a very small one!

C. M. CLAY.

Madison county, Ky.

TO PREVENT RANGE CROWDING.

Montana Stock Growers' Journal.

The one all needful thing to range stockmen is a method of preventing the overstocking of ranges. Of course cattle and horses are subject to various kinds of disease and every precaution possible should be taken to guard against the introduction of disease in our midst, but the prime great danger to stockmen who use the plains and hills of the West for pasture grounds is the danger of pasturing too closely and consequently destruction of the feed. From the southern boundary of the United States to the British Possessions we have seen this act repeated and always with the same result, namely, heavy losses of stock. Despite quarantine regulations and in face of the well known fact that our ranges were already stocked beyond the limit of safety, this year witnessed a large influx of cattle into Montana. From the east, west and south the herds came pouring in upon us and were located as best they might be under the circumstances, each owner taking desperate chances of being bankrupted by a severe winter. Up to the present time the winter has been all that the most hopeful could have expected, and of course there have been no losses of stock worth speaking of, but no one knows the kind of weather that is yet in store for us, nor what our losses may yet be. Of course we are hopeful for the best possible weather and results, but it is worth while now to have some thought for the future. The large drive to this Territory this year, together with a rather heavy calf crop, brings us face to face with the cold serious fact that we are about to repeat the history of older ranges, and bankrupt ourselves by overstocking the ranges. What can be done? We may threaten, we may admonish, we may quarantine, but the cattle get here just the same, and we have no assurance that this year's importation of live stock to this country will not be repeated next year, and if so we can easily foresee the consequences. The question of what is to be done must be answered, and we may mention a number of things that may be done to mitigate the evil of overstocking. If the country were capable of producing feed in large quantities the matter would be easy of solution. Stockmen could provide themselves with abundance of cheap forage and defy wind and weather, but it is useless to state that we cannot produce cheap food in quantities to serve this purpose. However, every stockman should provide all the feed of every description he can obtain, as one means of assisting in the great cause of preventing losses from overstocking. Then we might each year ship or drive such stock as will do to feed in the great corn belt east and south of us and feed them with profit. In addition to helping to rid the range of surplus cattle this also helps to control the marketing of beeves and to prevent a glut in the market of grass-fed beeves, and of some aid in maintaining good prices. Last fall quite a number of cattle were taken from this country for the purpose of feeding, and so far as heard from the results were very satisfactory. We learn that the seven hundred head driven from the range just north of the Yellowstone to Nebraska by Mr. David Hunter last fall, reached their destination in safety and in good condition, and that Mr. Hunter considers that he made a good move. Other herds have been driven and still others will follow for the same purpose. Perhaps, though, the action that is to prove the most beneficial in sustaining the number of cattle on our ranges to the capacity of the feed we have is the spaying of heifers. This not only curtails the increase of stock but it enables the stockman to breed up his herd very rapidly to the highest standard, as he could very naturally spay all the scrub heifers and let the good ones run to have calves. Any or all of these methods will postpone the destruction of our herds by overstocking to a time lengthy in proportion to the energy with which they are pursued. But there must be concert of action among stockmen of the entire country in this matter, for one man spaying a few head of heifers or driving off a few head of steers to feed will not relieve the pressure on the range.

☞ Please ask your neighbor to try THE STOCKMAN.