

heifers will breed all right, and, according to Davenport, if the sexes are different, they will breed. This latter accounts for the fact that occasionally a heifer twin with a bull breeds satisfactorily. What is apparently a heifer with a bull calf, in most cases is, he states, not really a heifer, but is rather an hermaphrodite, showing outward female organs, but possessing male internal reproductive organs. This seems to be a very reasonable explanation of the case.

Dr. Miles, in "Stock Breeding," says: "Among cattle, where twin calves are produced, the one a male and the other a female, the latter called a free-martin, is as a rule barren. When the twins are of the same sex, the reproductive powers are not impaired.

"In all other varieties of animals, so far as is known, when males and females are born together as twins, the females are as prolific as if born singly. In free-martins, the internal generative organs are generally imperfect, partaking of the characters of both male and female organs. In appearance, these imperfect females resemble steers, the feminine characteristics being mostly wanting. In rare instances, the free-martin is capable of breeding, the reproductive organs not having become malformed from her intra-uterine development with a male."

This statement bears out what Davenport says, the only difference being that Miles calls the imperfect animal, outwardly resembling a heifer, a female, while Davenport holds that it is a male; and both agree that it is, strictly speaking, neither, but an hermaphrodite.

It is indeed strange that no other class of animals, so far as we know, are affected in this manner by being born twinned with another of the opposite sex, and it is also strange that the male calf is almost invariably, if not always, a breeder. Miles, speaking on this point, quotes from Dr. Simpson as follows: "As to the cause of the malformation and consequent infecundity of the organs of generation in the free-martin cow, we will not venture to offer any conjecture in explanation of it.

"It appears to be one of the strangest facts in the whole range of tetratological science that the twin existence in utero of a male along with a female, should entail upon the latter so great a degree of malformation in its sexual organs only. The circumstance becomes only the more inexplicable when we consider this physiological law to be confined principally or entirely to the cow, and certainly not to hold with regard to sheep or perhaps any other animal. The curiosity of the fact also becomes heightened and increased when we recollect that when the cow or any other uniparous animal has twins both of the same sex, as two males or two females, these animals are always both perfectly formed in their special organization, and both capable of propagating."

The whole question is one of much interest, and one of which only a very little is known, but the fact remains that most female calves born twin with a male never breed, and, in fact, never come in heat, this latter indicating that the scientists are correct in stating that the internal reproductive organs of the apparently normal, but really abnormal, heifer are malformed. Animal breeding furnishes enough intricacies and perplexities to arouse the curiosity of the best-trained minds, and many of the world's best scientists have devoted their lives to a study of the problems involved, with the result that much light has been thrown on many matters concerning which we yet know comparatively little, and there is opportunity and need of much further study.

Union Stock-Yard for Winnipeg.

The Provincial Government of Manitoba, acting in conjunction with the three great railways of the West, the C. P. R., the C. N. R., and G. T. P., upon the recommendations of the Abattoir Commission, have made arrangements for the building of new union stock-yards in St. Boniface, a suburb of Winnipeg. Two hundred and fifteen acres have been acquired for the purpose, and the Government has an option on fifteen acres, on which a public cold-storage plant and abattoir will be erected. Everything is to be done on a large scale to allow of expansion. This move should insure a steadier and better live-stock market in the West.

The milk cow must be treated with kindness at all times. A cow that is always in fear of her attendant cannot possibly make her best record. The good milker is a highly nervous animal, and harsh treatment will cause a falling off in milk yield. At no time should a dog be allowed to run through the cows, and noise and blows should be avoided. The cow should feel perfectly safe in the hands of the man whose duty it is to look after her. She should have confidence in him, and he should treat her in such a manner that she will feel free to seek his presence, rather than be alarmed and run away at the sound of his voice.

THE FARM.

Heating and Ventilating a School Room.

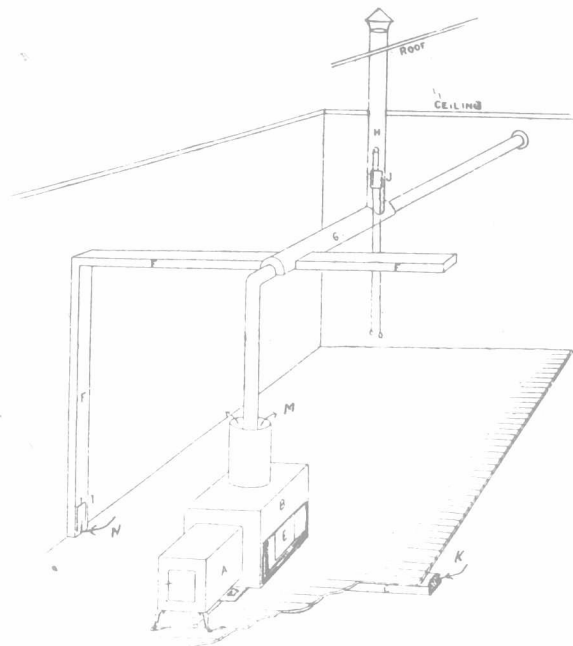
Editor "The Farmer's Advocate":

Would you kindly give your opinion re heating our public school room. The chimney is over the door, opposite end to teacher's desk. Some proposed putting the stove near the door, where the cold air enters the room; others would put it at the other end, and have pipes running through the building. Any suggestions on this subject would be gladly received.

J. S. C.

Were an unjacketed stove to be placed near the teacher's platform, that end of the room would have to be kept much too warm in order to have the door-end warm enough. If the stove were properly jacketed, and the jacket supplied by fresh air taken under the floor by one flue or a pair of flues, a current of fresh, warm air could be constantly supplied. But a system of inlets requires a correlative one of outlets, and outlet flues must be warmed internally to maintain the foul-air currents.

If you aim to combine satisfactory and economical heating with fairly good ventilation, set the stove near the door. Construct a jacket round it as suggested by the diagram. The foul-air flues may be a pair, one rising from each corner near the door, or a single flue placed



against the back of the stove and taken up through the ceiling, passing on its way through a drum on the stove-pipe.

A—a cast-iron box-stove; B—a jacket of No. 22 galvanized iron; C—one end of a flue passing under the floor from side to side of the school-room, divided under the stove by a plate of galvanized iron, and screened on the outside ends; D—a slide to control or shut off the inflow of outdoor air entering the jacket; E—one of a pair of slides on the sides of the jacket, to be opened whenever D is closed (from 4 p. m. to 9 a. m., and wholly or partly on very windy days); F F F—foul-air flues opening at the floor and taking the foul air into a drum, G; G—a drum with concave base, resting on the stove-pipe, and therefrom deriving the heat which maintains the current of foul air; H—a flue passing up through the ceiling and opening into the attic, or, better still, carried up through the roof and delivering the foul air above the ridge; I—a slide to control the foul-air current, it should be closed from 4 p. m. to 9 a. m.; J—a slide near the ceiling to open when the room becomes too hot, and during summer weather, when there is no fire in the stove; K—current of fresh air entering from outdoors; M—warmed, fresh air entering the room; N—foul air and cold air entering the outlet flue.

J. D.

Success with Clover.

In a comprehensive address on "The Management of Clover in Corn-belt Rotations," during the Missouri Farmers' Week at the State Agricultural College, J. A. Drake, Office of Farm Management, U. S. Department of Agriculture, showed that on the average farm success hinged largely on keeping up a systematic rotation. Among the conclusions were the following:

No rotation is complete without clover or some legume as a substitute for it. Hence the importance of continuous success with clover.

Continued success with this crop is a very broad problem. Failure may be due to one or more of a number of factors. Assuming that the land is well drained, and that a liberal amount of

seed is to be sown, the following is of extreme importance:

The Methods of Seeding.—The seed must be covered; the soil at seed-time must be in condition to insure this, and, if not, the conditions are not favorable for germination and for the young clover plants taking root. If the common method of sowing on "honeycombed" ground or on the snow, in winter grains, does not afford this covering, a seed-bed should be prepared by the use of a harrow, disk drill, or even a disk harrow. The seed will thus be covered, and moisture conserved to insure further growth. It may be necessary, under some conditions, to sow clover in the spring without a nurse crop, and after a careful preparation of the seed-bed.

The Top-dressing of Manure.—With only the ordinary method of sowing clover on the frozen ground or on snow, even on some of the poorest lands, a top-dressing of manure will most generally insure a good stand. On run-down lands, and where only a limited amount of manure is available, this is doubtless one of the best ways in which manure can be utilized.

A Mulch of Straw.—When sufficient manure is not available, a mulch of straw will prove very effective. If there is a slight covering of straw, leaves, stalks or other vegetable matter on the surface of the soil, it will usually insure a good stand of clover and maintain it throughout the season. Such a covering holds moisture, prevents undue baking and cracking of the soil, and is a great protection to the young clover crop.

Humus and Vegetable Material in the Soil.—The depletion of organic matter in the soil, and its immediate effects, is doubtless responsible for many of the increasing clover failures. In its absence, the soil becomes compact and lifeless, crusts and cracks, and moisture escapes very rapidly, thus furnishing a very unfavorable condition for the growth of clover in its early stages. Most soils, when new, and as long as properly handled thereafter, have an abundance of vegetable matter in them, and little difficulty is experienced in getting a stand of clover; but, with years of continuous cropping this becomes used up, and a change takes place in the soil, very largely due to this fact, which makes clover-growing more and more uncertain. A decided effort should be made to correct this deficiency.

Lime.—Most soils have sufficient amounts of lime to insure a good growth of clover, if other conditions are favorable, but some soils are naturally low in their lime content. On such soils many years of cropping sometimes reduces this lime to a point where a profitable crop of clover cannot be produced. Short-cut methods of trying to find out whether lime is needed should be avoided by farmers in general. The surest and safest way for the average farmer to find out whether his fields need lime is to apply lime to a small area and watch the results on the clover, as compared with no lime. Sorrel should not be taken as a certain indication that lime is needed. It will grow in the presence of an abundance of lime. Applying lime will not kill it out, but a rank growth of clover or some other similar crop will usually accomplish this.

The vicissitudes of the season in the West afford quite a contrast to those which affected Eastern Canada, where drouth prevailed until late in the summer. A Manitoba correspondent writes, under date of October 20th, "This certainly has been one of the most disappointing seasons that could be imagined. Practically all through the summer we had mild rainfalls, not leaving three days clear in a stretch. A couple of weeks ago it fared off, and we had about ten days' good weather. We certainly will have huge quantities of low-grade wheat this season."

THE DAIRY

There may be some difficulty in getting the cows and heifers to eat up their feed clean during the beginning of the fall feeding. Very often, while the cows are fed morning and night, and out on grass during the day, they do not eat all that is given them. All silage and hay which is left by them should be removed, and the manger swept out before the next feeding. Rejected food, allowed to remain in the mangers or feed boxes will cause the cow to get off her feed and off in her milk flow, which takes away profit.

In the dull-gray, shivery days of autumn, it is particularly difficult to maintain a good flow of milk. It is important, however, that no effort be spared, since a shrinkage at this season is very hard to repair. Premature drying-off is the penalty of neglect. Provide each day, if possible, a paunchful of succulent feed. Add such titbits as pumpkins, beet tops and the like, and open the silo, if necessary. In addition, feed each cow, according to response, on bran, oil cake and other concentrated feeds. Regularity in feeding and milking is also now doubly important.