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EDITORIAL.

It is not new land we need so much as better ways of working the old.

Crop rotation is one of the most important problems in agriculture. Choose a short one.

People are hankering for more land, when they have too much already for the labor and thought applied to it.

As reciprocity comes to be freely discussed and understood, it appeals more and more strongly to Canadian farmers.

The editorial request for a poem on tree-planting has already aroused the muse. Several strings of verses have been received. The best poem has been selected for publication.

The New York Independent points out that Eastern States farmers have been so infatuated with the idea that high tariff could deliver them that they have lost sight of what the schools could do.

To compel the use of East-and-West transportation routes, when a North-and-South one would take us more cheaply and quickly to an equally good market, would be like driving an extra ten miles to town for the privilege of patronizing some rich friend's toll-gate.

If anyone has cause to object to the reciprocity pact, it is the American farmer, who yields us a more lucrative market than we open to him. But even he stands to lose little, and should welcome the agreement as a first step towards the breaking down of that absurd and chaotic tariff under which he has been for generations fleeced.

"You have been doing a splendid work for some time now, in dissecting various economic fallacies that are rather widely believed in, and I feel sure that this work, being of such a fundamental and non-partizan character, will have a very permanent influence for good." Thus writes a friend whose opinions we value. We prize his appreciation especially because he discerns our true purpose. We have, as he suggests, sought constantly to present fundamental principles, believing that only in the light of these can any particular tariff problem be intelligently solved.

Boiled down, perhaps the greatest advantage of reciprocity is that it will eliminate much waste by reducing forced long-distance transportation. It will, for example, lessen such anomalies as the shipment of coal from Nova Scotia to Montreal, and from Pennsylvania to Boston; of horses from Ontario to Saskatchewan (at an expense of about $40 per head), and from the Western States to the Eastern States; of fruit from Niagara to Calgary, and from Oregon to Buffalo. "But," we hear in protest, "what will become of our great transcontinental railway systems?" Have no fear. There will still be plenty of unavoidable East-and-West traffic to keep present facilities busy, and to require additional roads as well. Reciprocity will so stimulate agriculture in Canada as to quicken the whole system of commerce and industry, thus augmenting the total volume of traffic, of which a considerable proportion will necessarily continue East and West.

Stable Walls, Ventilation and Dampness.

Laymen observe many facts which it takes the definite knowledge of the scientist to explain. Observers have long since noted that most masonry stables were damp. Enter them on a summer day or a winter morning, and you are sensible of a slight chill in the atmosphere, even when the temperature is not low. A good time to observe this is when one is suffering from a cold. A person can milk more comfortably in a frame byre than in a considerably warmer stable with solid stone or cement walls. Why? An answer to these and sundry other questions is contained in Prof. Wm. H. Day's lucid article, "Why Stone Stables are Damp?" published in our Stock Department this week.

From recent studies of Dr. Armsby, as reported in King's book on "Ventilation," it was determined that a 1,000-pound steer charged the air with invisible vapor thrown off from skin and lungs to the extent of 10.4 pounds daily. In order, therefore, that a stable containing twenty steers or cows may not have moisture condensed on its walls, there must be an air movement through it sufficient to remove 208 pounds of water every day; for 40 head, 416 pounds; and for 100 head, over half a ton of moisture daily. From various calculations by Prof. King, we quote this striking one: "When twenty cows are housed in a stable with a floor space 20 x 40 feet, and with a 9-foot ceiling, this entire volume of air must be changed once every 50 minutes when the stable temperature is 70 degrees, once every 21 minutes if it is 50 degrees, and if the stable air is 30 degrees, the entire volume of air in the stable must be changed as often as every seven minutes, in order to prevent moisture condensation." These calculations are made on the assumption that the outside air is at 20 degrees, and already normally saturated to about three-fourths its capacity.

It must not be inferred that the main purpose of ventilation is to keep stables dry. The primary object is to maintain the air pure. This article, however, deals with the relation of ventilation and moisture. Considered from this standpoint alone, how very inadequate is the ventilation of the average basement stable to carry off the moisture from the animals' lungs and skin? It is physically difficult to ventilate a stable under a lofty mow space, and some owners do not attempt to ventilate at all. The stone or cement wall being practically impervious to air, and it being the custom to keep stables sealed up in winter, with the doors only occasionally open and the windows scarcely ever raised, there is in the average basement stable too little ventilation, either systematic or accidental. So the stable air becomes charged with an excessive amount of vapor, which condenses on the cold walls as dew or hoarfrost, according to the temperature. The hoarfrost melts when the temperature rises, causing the stable to be particularly damp at a time when otherwise it might be readily dried out by opening doors and windows. Bear in mind that the accumulation of hoarfrost is not the cause of the stable being damp, nor is it a very great evil in itself. It is simply an occasional indication of dampness, and, as pointed out above, its melting temporarily aggravates the dampness during times of thaw. Bear in mind, also, that such accumulation of hoarfrost will depend largely upon the nature of the wall. If it be what is called a well-insulated wall—i. e., a wall through which heat will not pass readily, and which, therefore, seldom becomes chilled to freezing point on its inner surface—hoarfrost will rarely or never form on it, even though the stable air may be saturated. Dew may still be deposited on this wall, but dew does not accumulate to the extent that hoarfrost does.

Stone or solid cement walls, as Prof. Day points out, though practically impervious to air, are, nevertheless, good conductors of heat. In other words, they are poor insulating materials. The heat passes through them by conduction, just as it does through a window pane or a glass bottle. Cork a bottle of hot water, set it outside on a cold day, and see how soon the water will freeze solid. The water loses its heat through the glass to the outside atmosphere. A glass house, though perfectly air-tight, would be a very cold one. Prof. Day cites authorities to the effect that stone conducts heat about fifty times as fast as an equal thickness of wood; and he estimates that a stone wall, built up with mortar and sand, would conduct heat about thirty times as fast as an equal thickness of wood. A stone stable, though built with walls eighteen inches thick, is colder than a much thinner wall built of matched boards and building paper. Except on the score of solidity and durability, and one or two minor considerations, neither stone nor solid cement is a desirable building material. A hollow cement wall is a great improvement, because the dead air in the hollows is a good non-conductor of heat

From all of the foregoing, it will be clear why there is less tendency for dew or hoarfrost to form on the inside of a hollow cement or a well-constructed wooden wall than on a solid cement or stone wall.

But a far more important reason in favor of the frame or hollow-cement structure is that, by reducing the waste of heat by conduction through the wall, we make it possible to ventilate more freely, without lowering temperature below the freezing point, which with many is the minimum, on account of the danger of freezing water-pipes. The better the insulation of our stable walls, the more freely we can ventilate without lowering temperature below a given point. The free ventilation permitted tends to dry out the stable atmosphere.

To the already enumerated objections to stone or solid-cement walls should be added this further one, that, being thick, they exclude much light. A two-foot window in an eighteen-inch stone wall will not admit nearly so much light as the same-sized window in a four-inch frame wall; and, besides, will greatly hinder the distribution of that light throughout the stable. This latter objection, of course, applies equally to the hollow cement wall; but, in other respects, the hollow wall is much superior to a solid wall of the same material and thickness.

Here is another fact to consider in comparing the humidity of stone and frame stables. In the average wooden wall there are a good many chinks and crevices which provide accidental ventilation, and these ventilating currents carry off some of the moisture from the animals' lungs. Still another point: The wooden wall transpires a certain percentage of moisture through its tissue on much the same principle as the seasoning of a log, which eventually dries out clear to the center, by the moisture being drawn along, sponge-like, from the inner to the outer particles. So we see the wooden wall tends to rid the stable of moisture not only by means of the air currents passing through the chinks and crevices, but by the transpiration of moisture through its fibres. Prof. Day's experiments on this point show that