surface be perfectly dry. The indentations or foot-prints occasioned by horses' feet, produce injurious consequences to an extent and in a manner of which few farmers have any adequate conception. The surface and subsoil subjected to this treading become so much compressed as to exclude in a great measure the beneficient and necessary action of air, heat and moisture, conditions so essential to healthy crops, and renders subsequent cultivation both difficult and expensive. It is quite impossible to obtain a uniform tilth, so as to allow the free action of these essential physical forces, if any portion of the surface becomes consolidated, either by the pressure of horses' feet, or any other cause. It is for this reason principally, that steam culture on wet lands, or when even dry land is made wet by heavy and continuous rains, is found by experience to possess so great an advantage over horse cultivation: the ground is not trodden, and its physical conditions are consequently uniform. Hence the absence of patches of inferior growth, which are always more or less characteristic of crops on heavy land, subjected, especially in wet seasons, to the treading of horses. In a new country like Canada, these refinements of cultivation, as they are called, cannot of course, be very closely and generally observed in practice, but our farmers, even in the newest districts, will do well to keep the *principles* which they involve steadily in view. For example, heavy land intended for spring crops, should be deeply ploughed in the fall, incorporating with the soil rough farm-yard manure, and if water does not stagnate on the surface, such land can, in general, be brought into better tilth in spring without ploughing, by simply scarrifying the surface when it is in a dry state.

Light soils require a different treatment in many respects to what is necessary in such as are wet and heavy. For certain crops, such as wheat, beans, clover, &c., they are much benefitted by mechanical pressure, but care should be taken, even in cases of this sort, not to operate in wet weather, but when the surface at least, is dry. Soils of this character are particularly liable to be overrun with weeds, hence they should as much as possible be continuously covered with crops of some kind, for sheep feed, ploughing down, or hay. By keeping the surface in this way protected against excessive evaporation during the summer months, the land becomes enriched by vegetation, a large portion of the constituents of which is obtained from the atmosphere. It will thus be evident to every reflecting farmer how much depends upon securing a sufficient and uniform temperature of the soil, a condition that very much depends on the character of the cultivation to which it is subjected.

AUTUMN, WINTER AND SPRING MANURING.

A young farmer, whose rotation is corn, barley, wheat and clover, asks to which of these crops he should give his manure, and at what time of year.

Like nearly everything else in farming, the course to be pursued must vary with circumstances, and the farmer must exercise his judgment to some extent. But the following may be adopted as general rules: 1. The corn should have at least a portion of the manure, if practicable. It is scarcely possible to manure the land too much for this crop, provided it is properly applied, or so as to be well diffused through the soil. 2. The barley crop needs a good soil, but if the corn has been well manured, it will need nothing additional—the great additional points being thorough ploughing and harrowing and early sowing. 3. The wheat requires more discretion in its treatment, and usually, on good land, will be sufficiently manured by the previous crops, with the exception of a top-dressing, after the last ploughing, of five to ten two-horse loads of fine manure per acre. If oats are sown the second year instead of barley, a moderate manuring besides may prove useful, and sometimes necessary.

The usual accumulations of manure are in winter, but its fitness for application at different times of year will be controlled by the materials employed in its manufacture. If composed largely of corn fodder, it will be unfit to apply till the following autumn, after rotting down in heaps. But if the corn fodder is all cut with a machine before feeding out, it may be drawn out and spread as fast as produced. Nearly the same remarks will apply to straw, if used in large quantities as litter. In small quantities, it will not prevent winter application; or if cut up before being used for bedding, from one to four inches long.

Farmers have little fresh manure in autumn. The cheapest application is in winter, drawing out and spreading over the fields requiring it as fast as it is made. Several advantages result from this practice. It requires less handling over; it is soon out of the way; it is easily spread from the sled or waggon; it is drawn by men at a time when they may be otherwise idle; it removes the labor from the short and crowded period of spring; it allows the soluble manure to wash down into the earth and become intimately diffused; and it prevents the hardening and baking of the soil by the passage of the loaded wagons, when the ground is wet and soft after the breaking up of winter. It should therefore be the aim to draw out, as it accumulates, all the manure which is short enough to spread well, to plough under in spring for corn or other spring crops, leaving the longest and coarsest to rot down in heaps for autumn sown wheat, or for spreading on sod which is intended for corn the next year.

We have already remarked that corn can scarcely be manured too much, if the work is