THE CANADA FARMER.

A Family Journal, devoted to Agriculture, Internal Improvements, Literature, Science, and General Intelligence.

Vol. I. TORONTO, SATURDAY, NOVEMBER 20, 1847. **No. 22.**

MANURES.

(Concluded from page 157.)

MANURES COMPOSED CHIEFLY OF MOULD.

These are of vegetable or animal origin. And first, of animal mould. Here we shall find, that we come, perhaps, better prepared to understand this part of our subject, than either of the preceding classes. We have explained principles which enable us to understand why it is that animal and vegetable substances produce, by theory, identical matters. The only difference consists in the quantity of these matters. Let me here, reader, call your remembrance to the facts we stated respecting the two classes of food, and the classes of substances formed from that food by animals. A certain portion of that food contains none of that principle which forms ammonia. This portion of food makes fat. Another portion of food contains the substance which forms ammonia. This part of the food forms flesh and blood, and the other parts of the body, skin, hair, feathers, bristles, wool, horns, wool, nail claws, thews and sinews. Now, when a body dies and decays, the mould which its forms will make rich manure, or poor manure, just in proportion as it contains more or less of the substances formed out of that portion of food which furnishes flesh and blood. The fat, therefore, in animal mould, plays a very inferior part to that acted by the flesh and blood. In a word, as I wish to dismiss the fatty matters from our present consideration, I may do this, reader, by stating to you, all that you need know, that in decay, fat forms chiefly carbonic acid. If, therefore, you call to mind what we have said about the action of that, you will see how fat acts in manure. But the flesh and blood, and the substances formed from it, give precisely the same things as vegetables do when they decay, that is, water, mould, and salts. The great difference between the decay of animal and vegetable matters, is this, that as the animal bodies are far richer in the substance, which forms ammonia, so they afford a richer source of manure. The animal body contains that element, in quantity enough, not only to fill the pores of it own mould, but also enough to empregnate a large quantity of mould from other sources. The vegetable body, on the contrary, contains scarcely enough ammonia to fill its own mould. Vegetables differ in the quantities of the elements of food, which can furnish flesh and blood, and hence those vegetables are best for manure, which furnish most ammonia. We have already remarked on the difference, in this respect, between straws, grasses, and clover. But without going further into this comparison, which can have no other practical bearing, than to show you the immense difference in value, in animal and vegetable bodies, in forming manure, we may here resolve the subject into one great principle. The substance which forms flesh and blood, whether derived from plants or animals, alone forms ammonia during their decay, and the mould thence arising, is rich or poor manure, just in proportion as it contains the substance, fit to form flesh and blood. Starting from this principle, we find that animal substances, as flesh, fish, fowl, the body generally, including its various forms of covering, hair, wool, feathers, nails, hoofs, horns, claws, &c., afford, in the process of decay, about ten times more ammonia, than the straws and grasses usually entering into the compost heap. The animal bodies give more volatile aikali, than their mould can contain.

It is given off in such quantity that decay is rapidly hastened. All the signs of putrefaction, therefore, rapidly take place. The quantity of mould being small, nothing holds the volatile parts, they escape and are lost. Now common sense and practical foresight have stepped in here, from time immemorial, and taught mankind the necessity and utility of preventing the waste of the volatile and most valuable parts of the decaying animal substances, by covering them in with earth, soil, &c. These imbibe the escaping virtue or strength, and become rich and fertilizing. It remains to state, that every pound of animal carcass can impregnate ten pounds of vegetable mould; or, taking our arable soils as they usually occur, one pound of flesh, fish, blood, wool, horn, &c., can fertilize three hundred pounds of common loam. You will see, therefore, reader, how little you have now to learn of the necessity of saving everything in the shape of animal matters, and converting them to manure, by turning them into your compost heap. It is to be remarked, that the dry forms of animal substances undergo the process of decay when left to their own action very slowly. Wool, hair, flocks, horn-shavings, &c., or even leather chips and curriers'-shavings, bear long exposure, and seem quite indestructible. They yet are rich in all the true virtue of manure. They want something to bring this out, to set them a working, to bring on fermentation. Well, on this head we may lay down two rules: the first is, that if buried among a heap of fermenting matter, that communicates a similar change to these dry, animal substances. This is slow work. The second rule is, that if these dry matters are buried in the soil among the roots of growing plants, then these act more powerfully than fermentation, and the dry substances are converted to manure with a speed which may be called quick, compared to the fermenting process. The practical lesson to be drawn from these differences of action between the fleshy and horny parts of the animal is, that when you want a quick and short action of manure, to use the fleshy and fluid parts. Where you want a more slow and permanent action, to commence and long last after the first is over, to use the drier and harder parts. If now we turn to the other division of mould, that from vegetables, we find it lacking in the very thing which was superabundant in animal mould. That thing is volatile alkali. The great mass of vegetable mould is always impregnated, but always slightly charged with volatile alkali. There is not enough of the flesh and blood forming element in vegetables to hasten the decay of vegetable matter, or to convert them, after decay, into rich manure. Now here again not science, but practical common sense steps in, and did step in long ago, and as she taught mankind the necessity of adding soil or mould to the decaying animal matter, so here, to enrich vegetable mould, she teaches that animal matter, or that which is its representative, ALKALINE SALTS, must be added to vegetable mould, to make it active. It is not the mould alone which plants want. We have seen all along how nature provides a certain amount of salts in her virgin mould; we by cropping exhaust these faster than the mould. We have tons of that, yet our fields are barren. They want, as has been explained, salts. And now, reader, having been brought by this course of reasoning to what the mould wants, consider what tons and tons of useless mould you have in your swamp, muck and peat bogs, your hassocks, and your turfy meadows. All these, foot upon foot in depth as they lie, are truly vegetable mould, in a greater or less degree of decay. If you dig this up, and expose it to the air, that itself sets it to work, decay is hastened, volatile matters escape, yea, ammonia, the master spirit among manures, is secretly forming and at work, warming and sweetening the cold and sour muck. Without further preparation, practice confirms what theory teaches, that this process alone furnishes from these beds of vegetable mould a very good manure. It is already highly charged with all the salts which a plant wants. But experience, doubtless led by a light of the good results of mixing mould with animal matter, to preserve its strength, has also reversed the practice, and taught the utility of adding to vegetable mould quickening salts; that is, either the volatile alkali, by composing the mould with stable manure, or alkali in the shape of ashes, or potash, or soda ash, or lime, or a mixture of these. In fact, whatever substance can by putrefaction give off volatile alkali, will and must, and does convert vegetable mould, of itself dead and inactive, into a quick and fertilizing manure.

If then, reader, you pause here a moment upon this fact, and then cast your view backward over the principles we have endeavoured to impress on your memory, you will perceive that there is not, among all the classes and kinds of manure which we have shown you, one which may not be added, or, as is the phrase, composed with peat, meadow-mud, swamp-muck, pond-mud, or by whatever other name these great storehouses of vegetable matter are called. These are the true sources of abundant manure, to all whose stock of cattle, &c., is too small to give manure enough for the farmer's use. It is the farmer's business to make a choice, if he has any but Hobson's, of what substance, or mixture of substance he will use. We have shown him how small a portion of animal matter, one to ten, of pure mould, will impregnate that substance. Taking then a cord of this swamp muck, we shall find it contains in round numbers, about one thousand pounds of real dry vegetable mould. So that the carcass of an animal weighing one hundred pounds evenly and well mixed up with a cord of fresh dug muck, will make a cord of manure, containing the elements, and their amount too, of a cord of dung. But it is not of the carcass of animals that the farmer expects to derive the quickening salts for his muck. This can be the source of that power only to the butchers, (what fat land they all have!) or to the dwellers near the sea, where fish is plenty. A barrel of alewives, it is said, fertilizes a wagon-load of loam. The carcass of a horse converts and fertilizes five or six cords of swamp-muck. A cord of clear stable dung changes two cords of this same muck into a manure as rich and durable as stable manure itself. These are all the results, reader, of actual practice. The explanation of the principle has only come in since the practice, and show the how and the why of this action. But the merit of explaining this action, would be, as nothing, if it had not conducted one step further. The explanation of the principle of action of animal matters, animal manures of all kinds, whether solid or liquid, on muck or peat, has led chemistry to propose, where these cheap and common forms of quickening powers are not to be had, to mix ashes, or potash, or soda ash with swamp-muck. Now, reader, this is not an idle, visionary, book-farming scheme. It is perhaps one of the few successful, direct applications of chemistry to farming, which speaks out in defence of such book-farming, in tones and terms which bespeak your favourable consideration for the attempt which science is making to lend you, reader, a helping hand. This proposal, the offspring of science, has been carried out successfully by practical men in our own country, and has made its way abroad. Though this is not the place to give you the details of their results, you may rely upon the fact, that alkali and swamp-muck do form a manure, cord for cord, in all soils, equal to stable dung. Well now, after your patience in going over these pages, I hope you will find your reward in this statement. To be sure, it might have been said at once, and so have done with it, but I hoped, reader, and I am sure I have not been disappointed, that you liked to dive a little into the reason of things, and felt that you had farmed too long by the rule of thump, to be satisfied that it was the road either to improvement or profit. And so among your first attempts at improving your worn-out lands, always supposing you have not a barn-cellar, hogs, and swamp-muck, so aptly called by one of our own self-made practical men, the "farmer's locomotive," I presume you may like to know the proportions in which you may mix swamp-muck and alkali. You can hardly go wrong here by using too much, the great danger is, you will use too little alkali. But calculating on the proportion of mould in fresh dug swamp-muck, or peat, it may be stated as a rule, grounded on the quantity of quickening power in a cord of stable manure, that every cord of swamp-muck requires eight bushels of common ashes, or thirty pounds of common potash, or 20 pounds of white or soda ash, to convert it into manure equal, cord for cord, to that from your stable. Dig up your peat in the fall, let it lay over winter to fall to powder, calculate your quantity when fresh dug, and allow nothing for shrinking in the spring; when your alkali is to be well mixed in with the mould, and, after shovelling for a few weeks, use it as you would stable manure.

These quantities of ashes and alkali are the lowest which may be advised. Three or four times this amount may be used with advantage, but both the quantity of alkali and the number of loads per acre, must and will be determined by each for himself. It is a question of ways and means, rather than of practice. But supposing the smallest quantity of ashes or of alkali to be used which we have advised, then at least five cords of compost should be used per acre. This may be applied to any soil, light or heavy. But there is another form of this swamp-muck and alkali, which should be used only on light, loamy, sandy soils, to produce its greatest benefit, though even on heavy soils, if not very wet, it may be used with great advantage. This is a compost of one cord of spent ashes to three cords of swamp-muck. This is decidedly the best mixture which has yet been tried. We have in this all that mixture of various salts and mould which plants want, and both by the action of the mould and that of the air, the alkali of the spent ashes, which no leaching would extract, is soon let loose, and produces all the effects of so much clear potash or soda.

I have thus, reader, given you a few of the ways by which you may convert your peat bogs and swamps into manure, when you have neither cattle nor hogs. I have not thought it worth while to go into this subject further, and give you directions for lime and salt, or other matters which might be used. I have given you the