Drainage.

A copy of the act to consolidate and amend the drainage laws as passed at the last session of the legislature has just been received by us, and while we have not had time to carefully look over it in order to give particulars as to the most important changes, yet we notice that a great many have been made and it is to be hoped that after all the work of the drainage commission appointed to look into this matter and the evidence produced in the expensive suits that have grown out of the old drainage laws, that the present act will be easy to operate, just in its provisions, clear, and that the future will not see as much expensive litigation, and so many different decisions as the past. However, let the act be as it may, experience will prove its worth, but there are matters in connection with practical work of constructing these drains that require as much consideration as the law under which they are made. Drainage, as well as all other public works should be constructed with a view to permanency. The practibility of drainage of land for agricultural and other purposes has long since ceased to be a question. As the population of the country has become more dense, the necessity for the drainage of the more unfavored portions became apparent, and as necessity is the mother of inventions, the good work was begun. Although their notions of drainage was crude at first, our ancestors' efforts were rewarded more or less. Marked improvements have been made from time to time. The system of dykes and drains of Holland produced one of the most fertile and populous districts of Europe; but the Romans were probably the first to employ covered drains. These were formed of wood and other substances and were highly praised by Roman agricultural writers. The progress of covered drains has been very slow until about the middle of this century. These were not at first constructed with earthen-ware but with wood, brush, straw and stone.

The tendency of drainage has been for the last quarter of a century towards permanency, and so far as the smaller drains are concerned, the object has been pretty well attained. The drainage of small areas is well understood in many localities in this country, but could be greatly improved, if at least the smaller outlet ditches were constructed in a more permanent manner. It is our object to chiefly treat of these smaller outlet drains varying in length from one to three or four miles or of still greater length owing to circumstances. These may be treated under two classes: First, those which empty into streams and outlets which do not afford sufficient outlet without improvement. Second, those which empty into streams which afford sufficient outlet without improvement.

With the first class nothing of a permanent nature can be done until a good outlet is secured. This must be had at almost any cost unless we are still connected with the good old way of digging out in the fall in the upper course of the stream every three or four years. But with a view to permanency and economy this main outlet must be made one good and grand improvement. In doing this we must consider the factors of straightness, depth, width, flare or banks, and the removal of excavated earth as well as such portions of banks likely to slide into the ditch at such distances as to secure the best results. Each of these factors and others enter into the betterment of the outlet and must be duly studied with a view to permanency, for this outlet will cost something and must not require improvement every few years. It must and will stand for many years if properly constructed and cared for.

Having secured a good outlet for drains of the first class, and nature having provided for us outlets for those of the second class we should now devise some means to construct those shorter drains in such a manner as to get rid of the constant cleaning out of these direct outlet for farm drains. The latter should flow freely throughout their entire length at all times. The mouths of tile drains should not be obstructed by back water or by sediment allowed to accumulate in the outlet. This backing destroys a growing crop. Evidently to avoid this calamity, the outlet must be deep enough and have sufficient fall to convey the water as fast as it reaches them to the larger outlets mentioned above. The construction of these smaller ditches so as to secure the proper depth and fall, will often require deep cuttings, as the natural fall is often greater at, or near the outlet, and as deep open drains are expensive and require constant attention to keep them free from obstructions too numerous to mention, we must overcome these obstacles in another way. The use of tile or sewer pipe would certainly remove many of the obstacles to open drains. The depth would always be the same. The capacity when properly constructed would be a constant quantity. The sediment would be reduced to a minimum.

But there are some objections to tiling or sewering these drains. The first and greatest of all is the cost of tile or sewer pipe. The incapacity to carry all the water at certain times, and other smaller objections will be raised. The expense of tile or pipe will vary of course with the size of the pipe, not exactly in proportion to the squares of their diameters, the larger being the cheaper according to capacity as may be readily seen by examining price lists of sewer pipe companies. But would it not be better to increase the cost of improvement considerably than to be constantly overhauling the old sluggish watercourse, and running the risk of loosing a crop every few years? By increasing the depth we will increase the capacity so that the pipe need not be so large as if laid at the depth of open drains. Let the pipe be laid from one to two feet deeper than the ususl depth of these open drains, thereby allowing the farm drains to proceed slowly all the time. In case of an unusually heavy rainfall the water might possibly gather in faster than the pipe could discharge it, forming a head of a foot or more of water for a short time. But the pressure created by this head will increase the flow of water, and have a tendency to remove all silt that may be deposited in the pipe, leaving the drain in as good or even better condition than before such flood. There can usually be to advantage a shallow open drain left over or near the tile drain. This can be formed as the case may require as to depth and slope of banks, but usually should be from one to three feet in depth, with banks sloping so as to be easily crossed with wagon, mower or plow. The aggregate amount of cost of location and the amount of time attending hearings and sales will be no trivial sum in a period of twenty years. In the improvement of watercourses of the first class, as arranged above, no attempt should be made in piping until a good deep outlet is secured, or there will be a demand in a few years for the removal of pipe from the ditch and the annihilation of the engineer.

In the improvement of either class of drains with pipe, the most serious mistakes that can be made will consist in the want of proper care, in placing pipe and back fillings, and the neglect of the engineer in properly overseeing the work as it progresses. Each locality has its peculiarities, and has to be studied carefully by the engineer and parties interested before any final decisions are made.

Roads and Road Making.

Earth roads should be dept smooth, hard, up to grade and cross-sections by the addition of suitable material at frequent intervals, and in small quantities at a time on all places out of grade, securing a surface such as shall quickly convey the water to side ditches. The latter should be kept open, of uniform and sufficient slope, free from rocks, ridges, depressions, and continuous to some natural or artificial outlet. Sprinkling and rolling are valuable adjuncts of repair, especially in dry weather, and a thorough rolling in spring after ground has settled, is a marked benefit.

Local boards of health should have an eye not entirely single to the health interests of their own towns. They can often restrain indiscretions that would transmit infection to other towns. They should do so, hoping meanwhile that their neighbors will reciprocate in due time.

A municipal reformer has proposed to use the garbage of his city as fuel to supply power to an electric plant. There is an element of economy concealed in this proposition, that should appeal to the taxpayer.